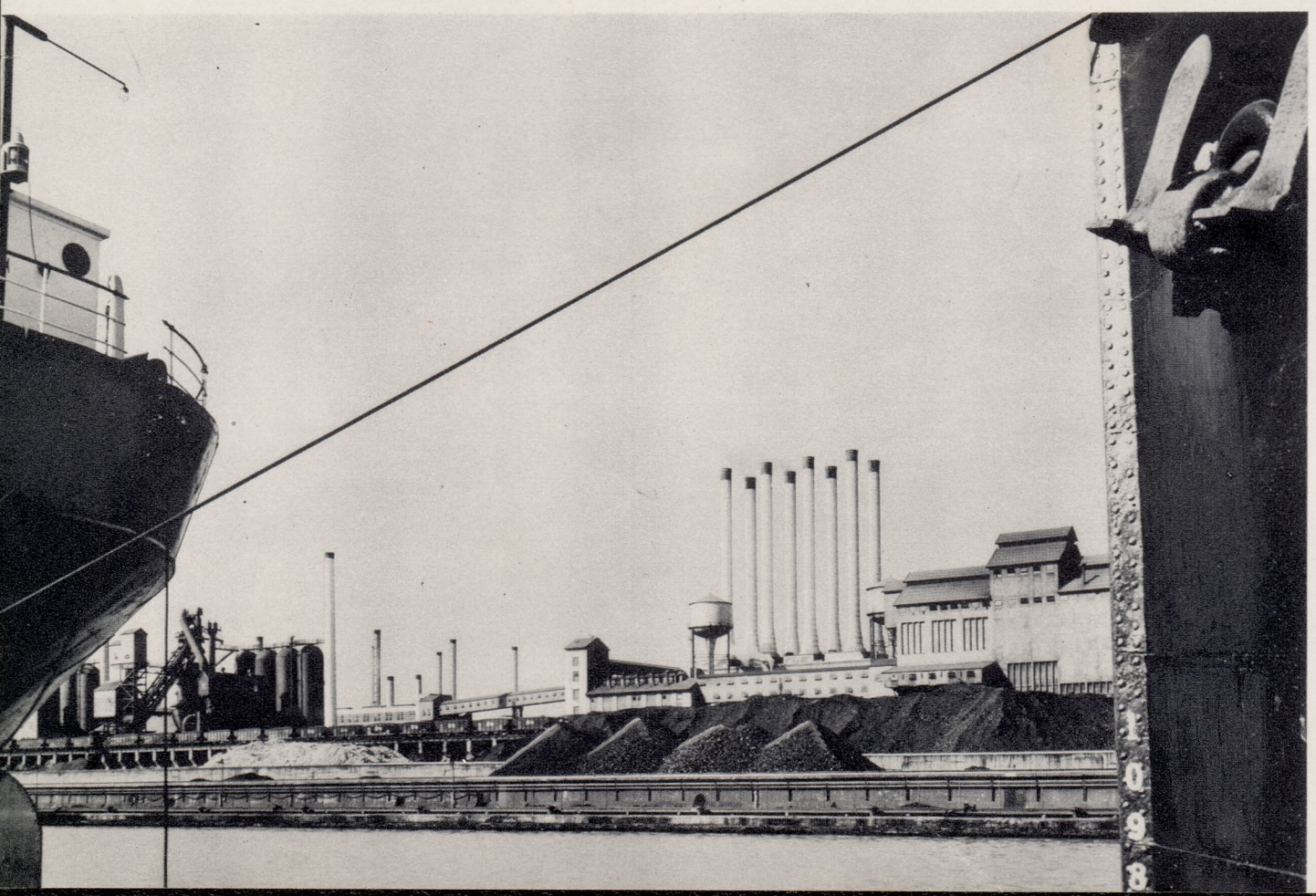
VICTORY PICTORIAL

Ford

A worthy symbol of the Ford Motor Company's important part in producing defense materials is this giant four-engine Consolidated B-24 bomber. It is the most picturesque of the many military products Ford is building or preparing to build.

AMERICA COMES FIRST ★★★

AT THE WORLD'S GREATEST INDUSTRIAL PLANT



Along the banks of the River Rouge a few miles from downtown Detroit is located the Ford Motor Company's great Rouge plant, now concentrating its vast resources on national defense production.

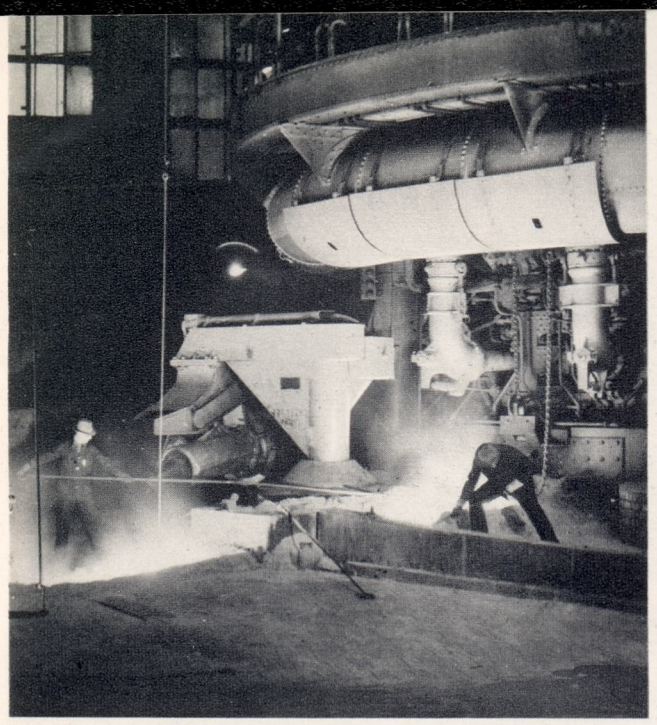
World-famous for its size and advanced industrial methods, the Rouge plant spreads over many acres—a tract often described as "the most productive in the world."

Machines and manpower in this industrial colossus are working around the clock to increase the flow of military and naval implements—airplane engines, bomber parts, mobile units and trained hands that will help speed the nation to victory.

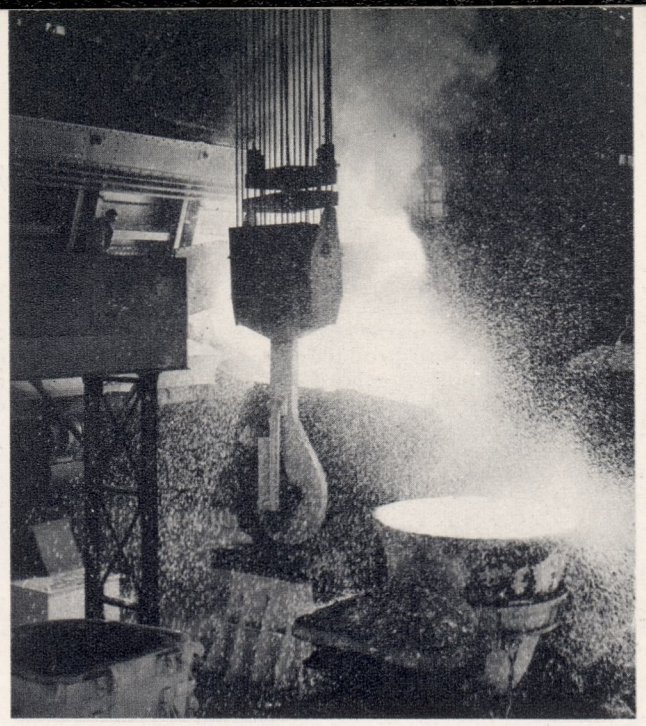
It is interesting to recall that the Rouge plant, when it first began producing back in 1918, was turning out eagle boats for the Navy during World War I.

A building was erected in 90 days and Ford began producing eagle boats less than five months from the time ground was first broken. From that time until the Armistice, a new Ford-built eagle boat was launched every other day.

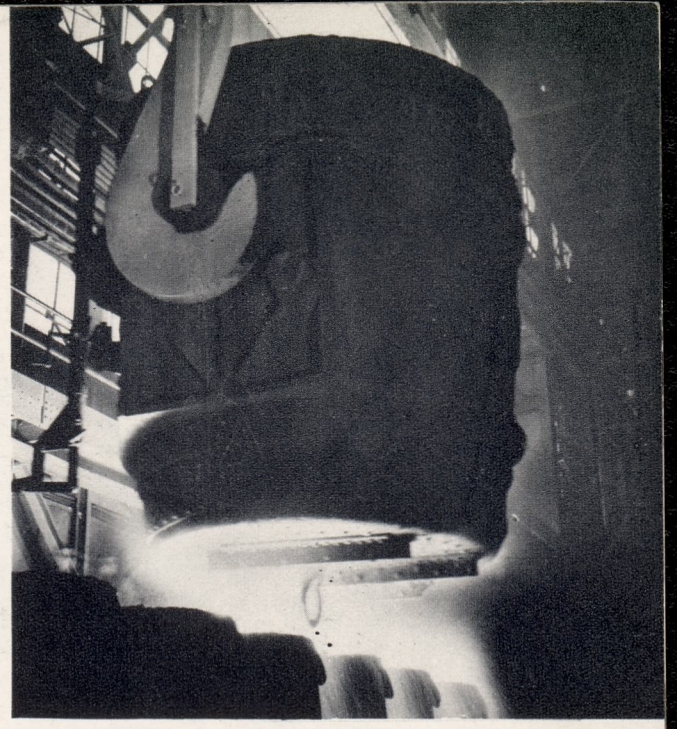
The story of Ford's "all out" production of armaments is graphically told by this photo (left) of intense industrial activity.



A stream of molten iron from one of the two big Rouge blast furnaces flows toward its appointed destination.

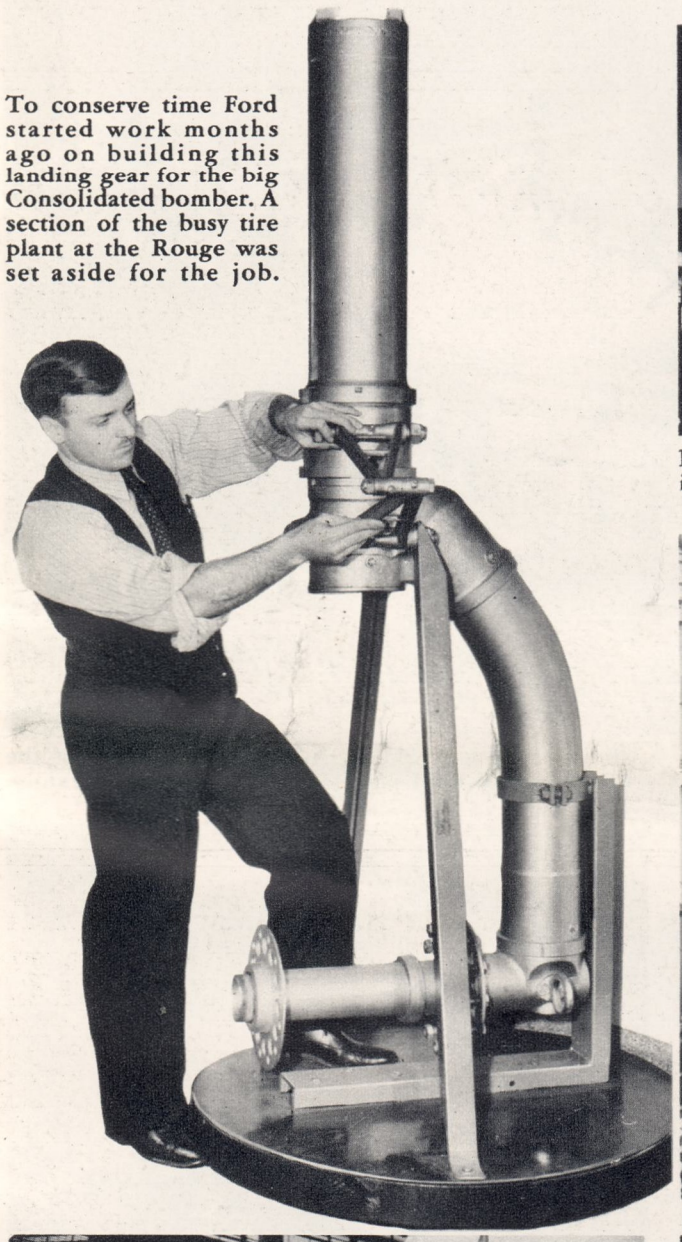


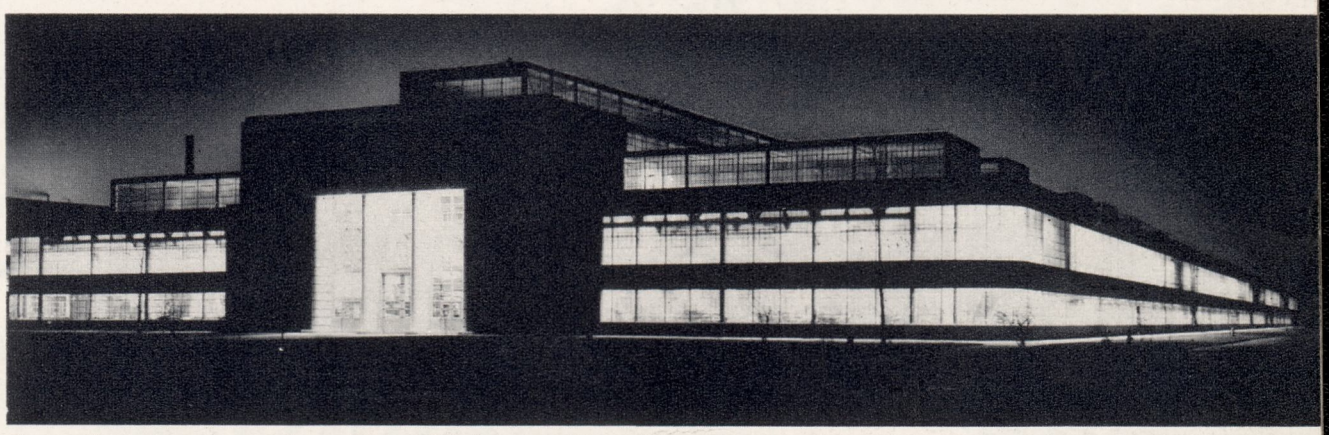
Pyrotechnic display as an open hearth furnace is tapped. Ford converts more than 600,000 tons of steel annually.



A 185-ton ladle of steel creates a cascade of fireworks as it empties into huge ingot molds.

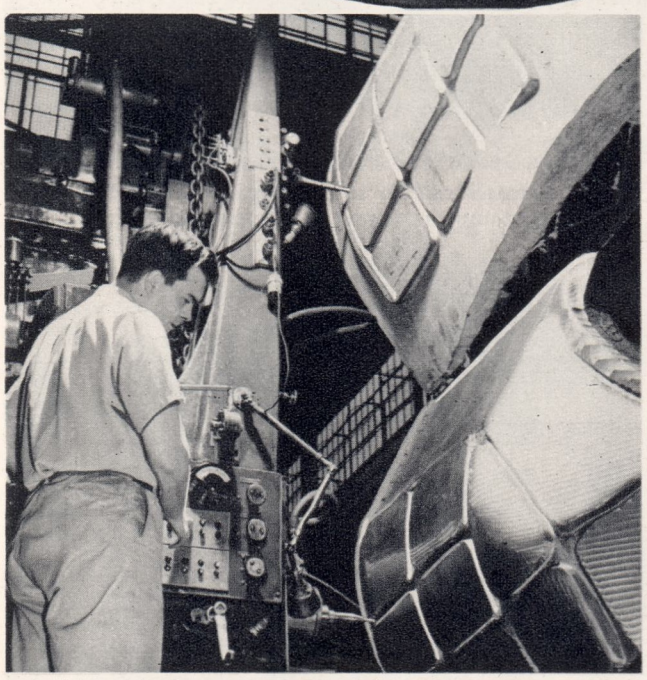
To conserve time Ford started work months ago on building this landing gear for the big Consolidated bomber. A section of the busy tire plant at the Rouge was set aside for the job.





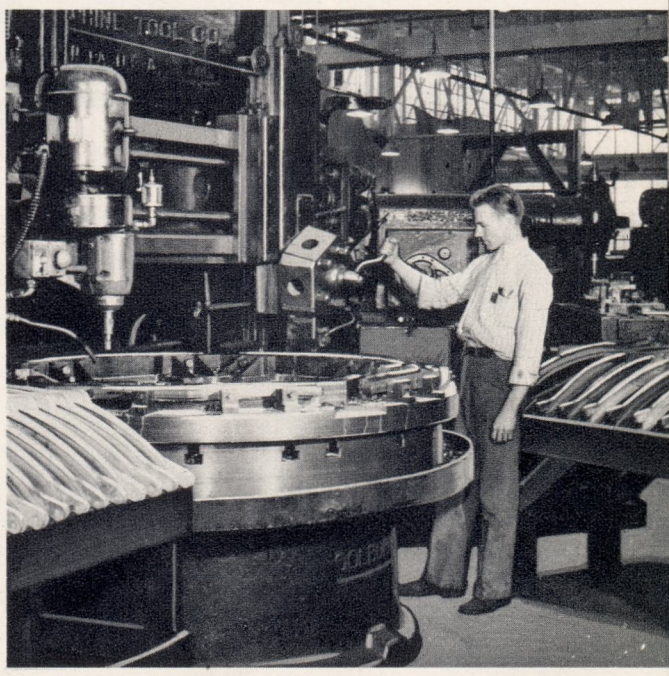
Devoted 100 per cent to the making of defense tools is this tool and die shop (above) at the Rouge.

The main bay of the tool and die shop, with a bomber wing fixture in the left foreground, is shown below.



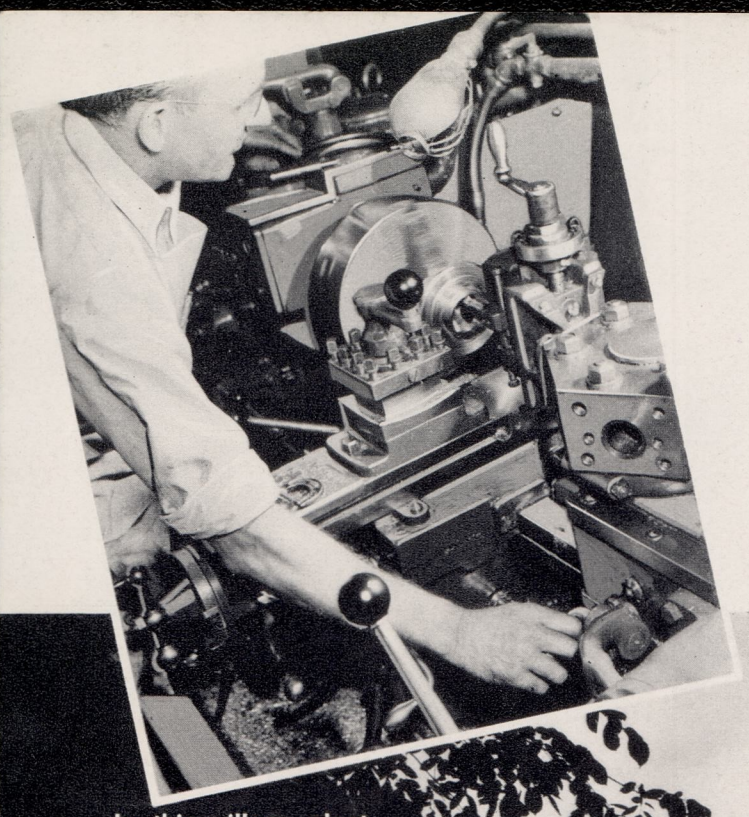
Skilled craftsmen in the Rouge tool and die shop fabricate defense equipment. Here a giant engraving machine etches a die for part of the nose on a B-24 bomber.

Familiar to thousands of travelers is this "Ford" sign. Nearby is a section of the Rouge plant devoted to Ford "blitz buggies" and other military mobile units.



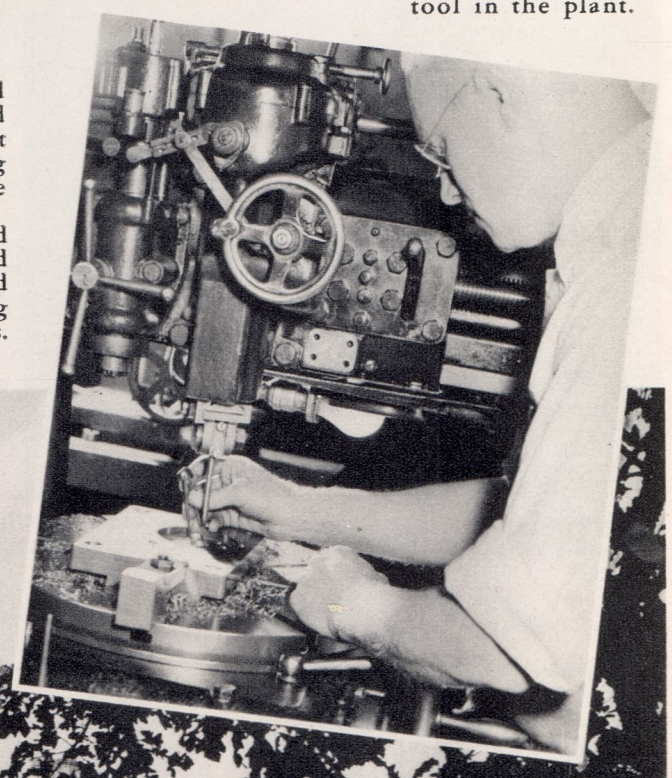
Another time saver is a department set up at the Rouge to make B-24 accessories. This machine is at work on "flap tracks" for the bomber wing.

TOOLING UP FOR VICTORY



In this village plant (above), a worker is carrying out a defense tool assignment.

Here is a typical worker in a Ford "village industry" operating a machine tool in the plant.



★ Every ounce of resourcefulness at the Ford Motor Company's command has been pressed into defense production. While the Rouge plant and similar big Ford factories are busy building military products, numerous other Ford units are backing them up with necessary tools.

The Ford "village industries" also are devoted to defense tooling. The Lincoln plant of the Ford Motor Company is likewise entirely devoted to war production work. At the Ford engineering laboratory defense jobs are now numerous.

Hub of Ford experimental work is the Engineering Laboratory adjoining Greenfield Village. Here ideas are conceived, worked out and tested. Much of the activity in all Ford plants stems from this laboratory.

Picturesque old gristmill now is a Ford "village industry" producing small dies and engravings.

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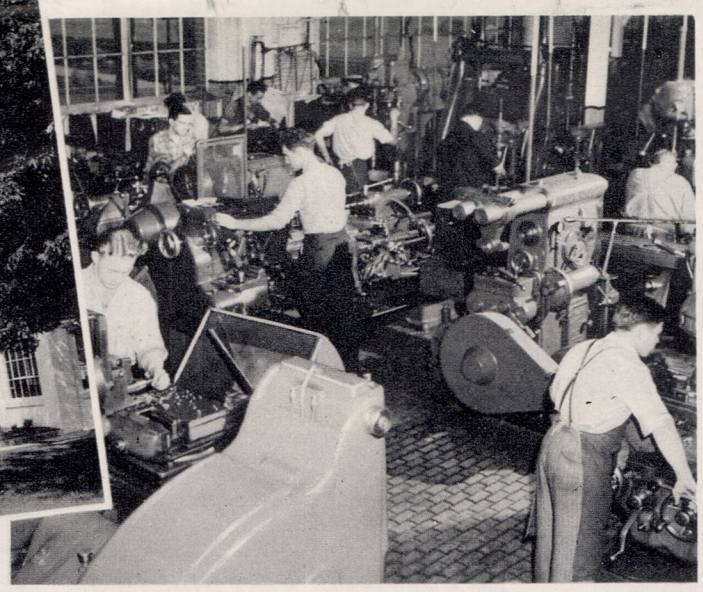
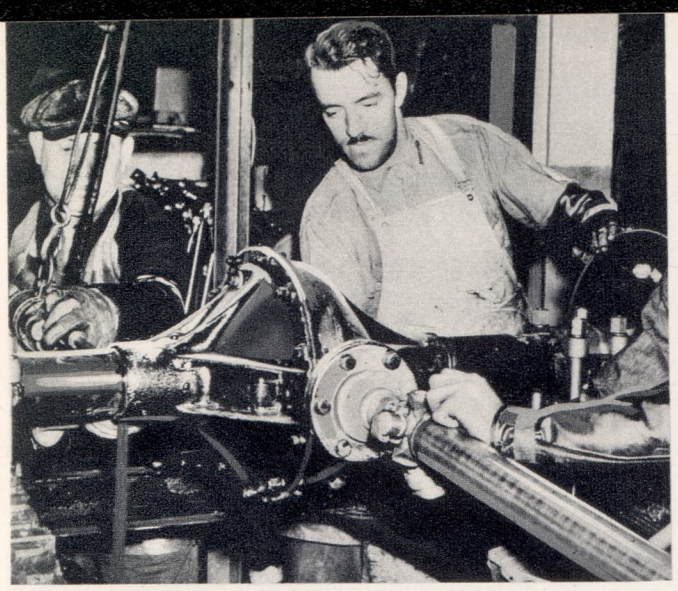
In the Lincoln plant two engineers set up a job with the incredibly accurate "Jo" gage blocks.



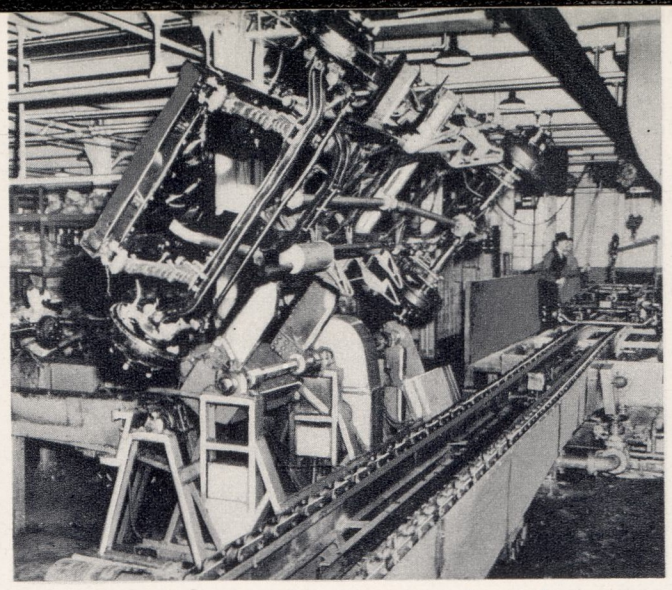
This is a view of a village Ford plant. Small in comparison to the immense bomber plant but important in its own right.

Along a small stream in Michigan, is another village plant now converted to defense production.

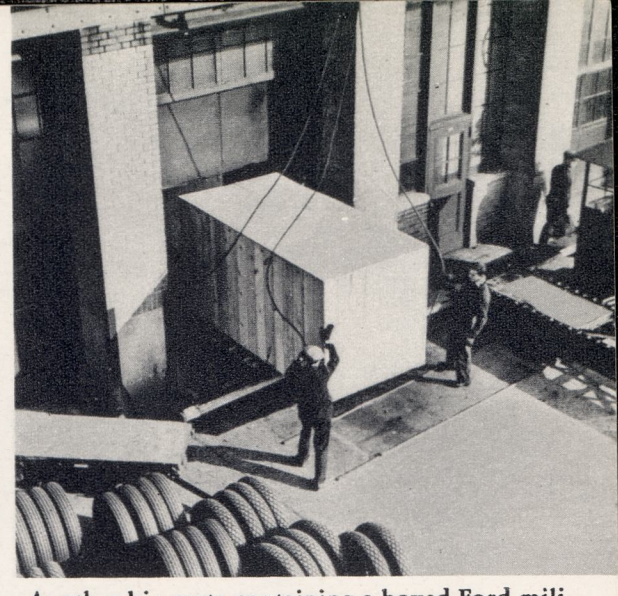
Another of the Ford plants now converted to tooling operations and production for America's "all-out" war effort.



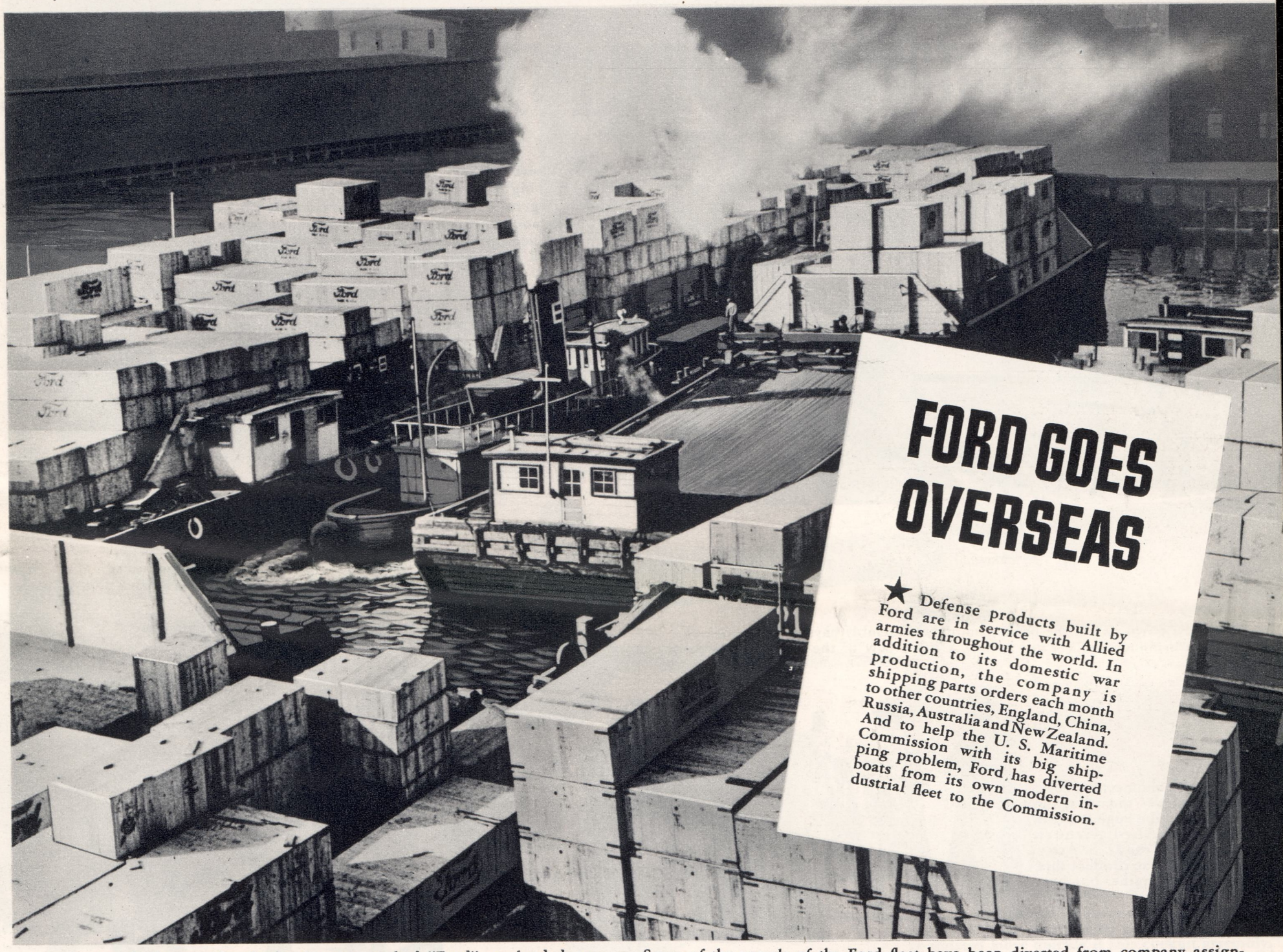
At Ford United States assembly branches, men of all nationalities work side by side for a common cause—victory for the Allies thru unprecedented war production.



Here is another assembly line scene in an important Ford plant working at full speed on domestic and export Army mobile units. They come off the line by the hundreds.



Another big crate containing a boxed Ford military truck emerges from one of the Ford plants, ready to be placed on ship for an overseas trip.

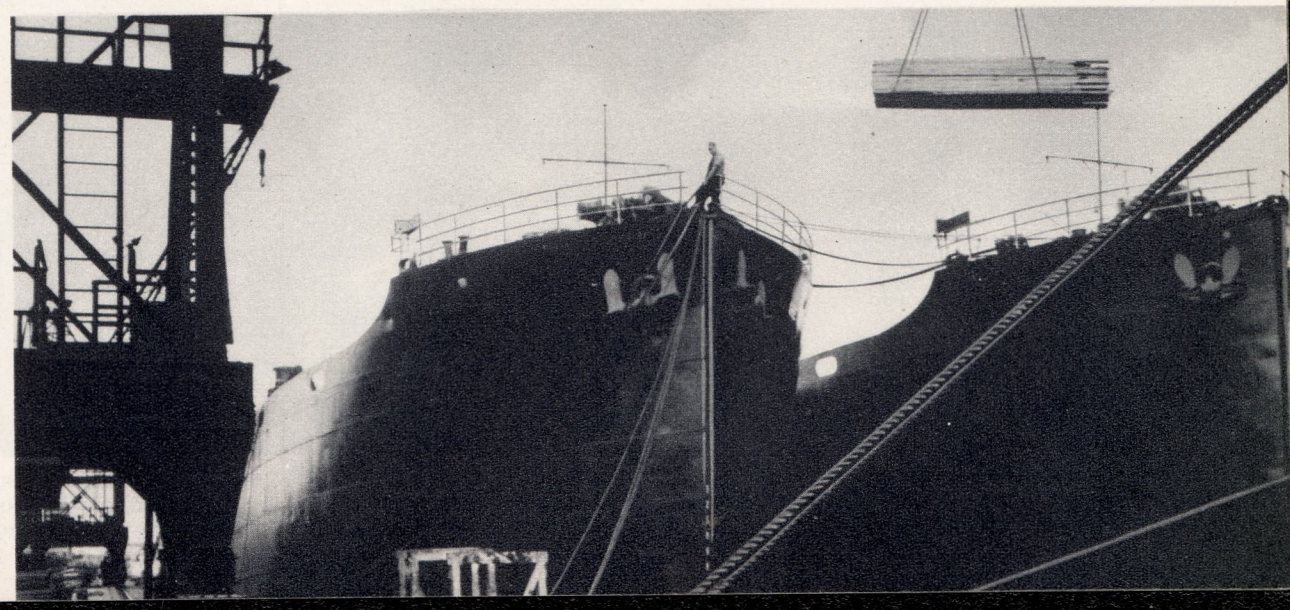


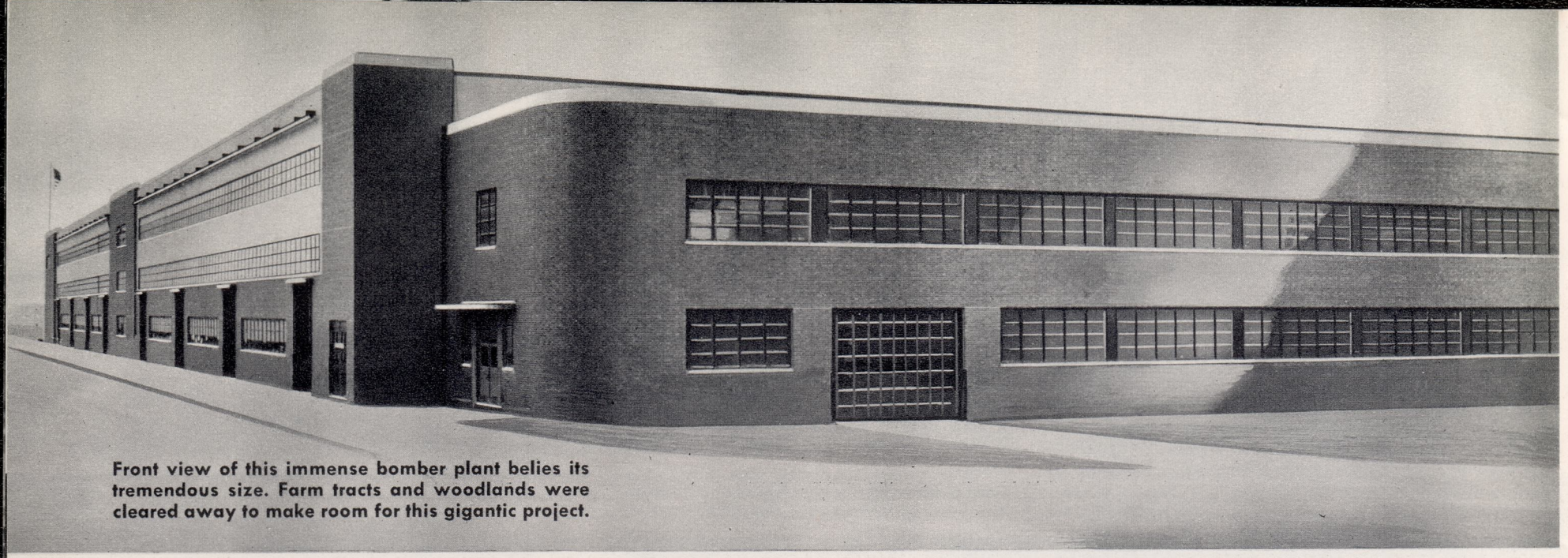
FORD GOES OVERSEAS

★ Defense products built by Ford are in service with Allied armies throughout the world. In addition to its domestic war production, the company is shipping parts orders each month to other countries, England, China, Russia, Australia and New Zealand. And to help the U. S. Maritime Commission with its big shipping problem, Ford has diverted boats from its own modern industrial fleet to the Commission.

Hundreds upon hundreds of crates marked "Ford" are loaded on lighters (above) at Ford tidewater plants. These crates being swung aboard (below at lower left) are loaded with potential victory.

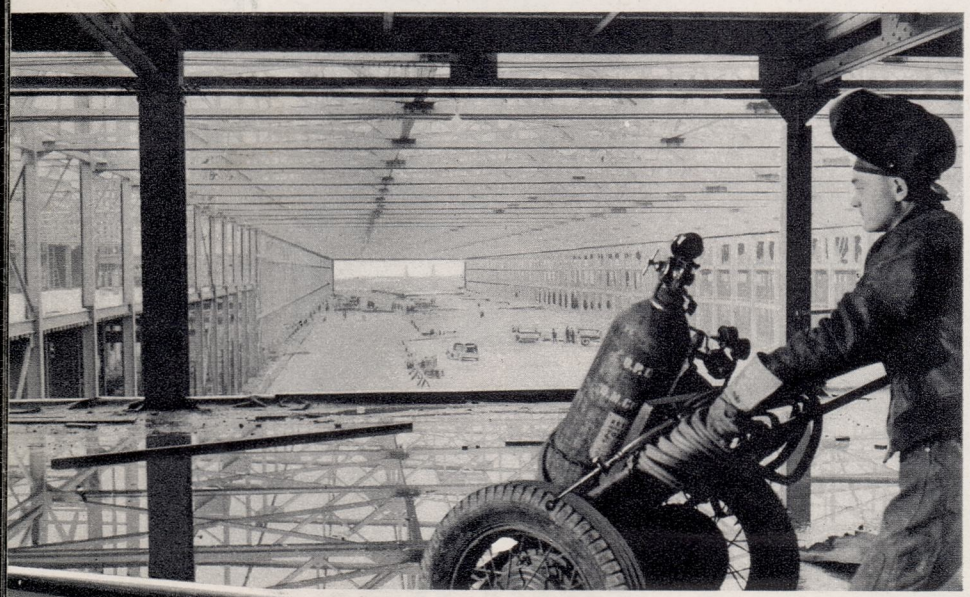
Some of the vessels of the Ford fleet have been diverted from company assignments to defense seaboard hauling for the U. S. Maritime Commission. Several of the Ford ocean-going vessels are now in government service on the high seas.





Front view of this immense bomber plant belies its tremendous size. Farm tracts and woodlands were cleared away to make room for this gigantic project.

"ALL OUT" CONSTRUCTION FOR GIANT BOMBER PRODUCTION



★ A vital military need for heavy bombers—planes capable of carrying big loads at high speed over vast distances—led to development of giant aircraft such as the Consolidated B-24.

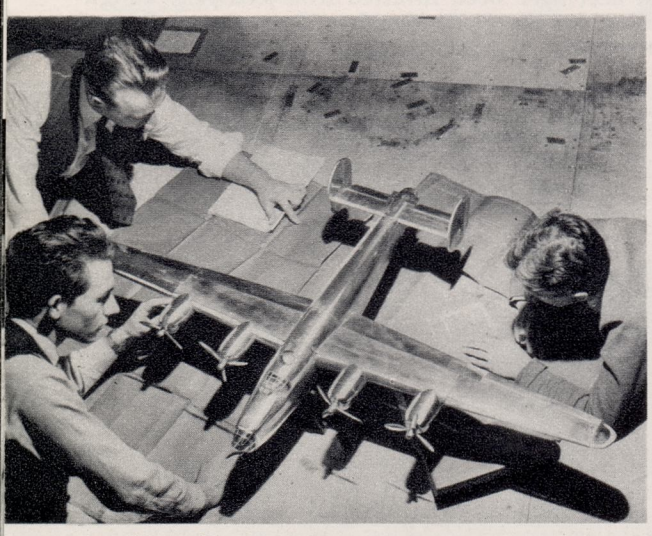
Fabrication of this bomber on a mass production basis is Ford's most important defense manufacturing assignment. To do the big job, Ford is erecting one of the world's largest airplane plants.

Today, with most phases of production already under way in completed portions of the structure, high-speed construction crews are working day and night to finish the monster plant.

Ford engineers, meanwhile, are at work fitting their famous automotive mass production techniques to the more intricate job of making bombers. Countless ways and means of speeding production have been found. A sub-assembly fabricating system has been developed that will save thousands of man-hours and that will mean more planes at a lower cost to the nation's hard-pressed taxpayers.

This view down one of the partly completed assembly bays gives an idea of the plant's immensity. Yet this is only a small part of the total floor area.

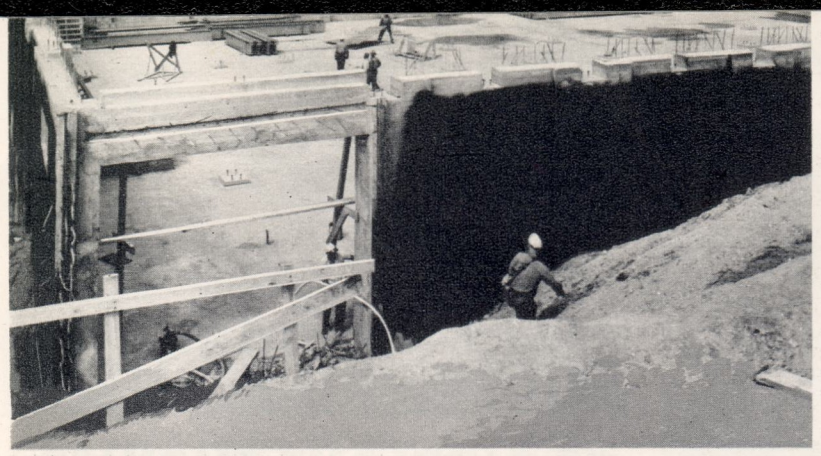
A dramatic moment for Ford engineers was their first inspection of the huge B-24. It landed at Ford Airport shortly after the U. S. Army selected Ford to produce this mighty 4-engine bomber.



Ford production experts study a scale model of the B-24 . . . a pigmy in this photo but actually a most formidable weapon for the nation's defense.

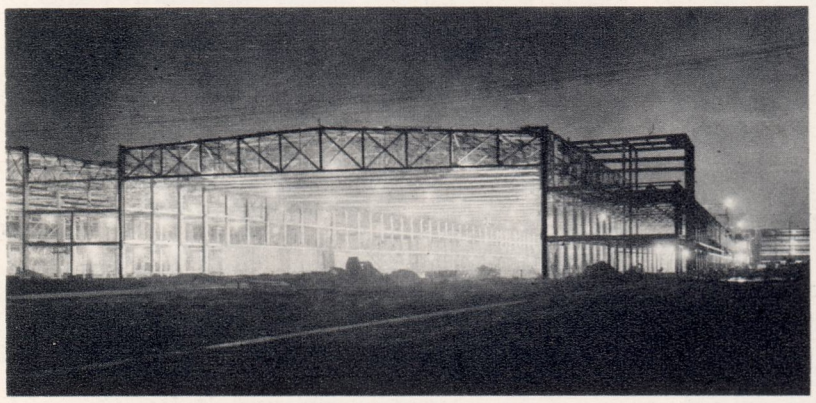
In huge drafting rooms Ford engineers work on the staggering job of organizing production routine for the B-24. More than 40,000 blueprints are needed.

Pending bomber plant completion, production technique is being perfected at the former Ford Tri-Motor Airplane plant. Students are shown making a wing flap.

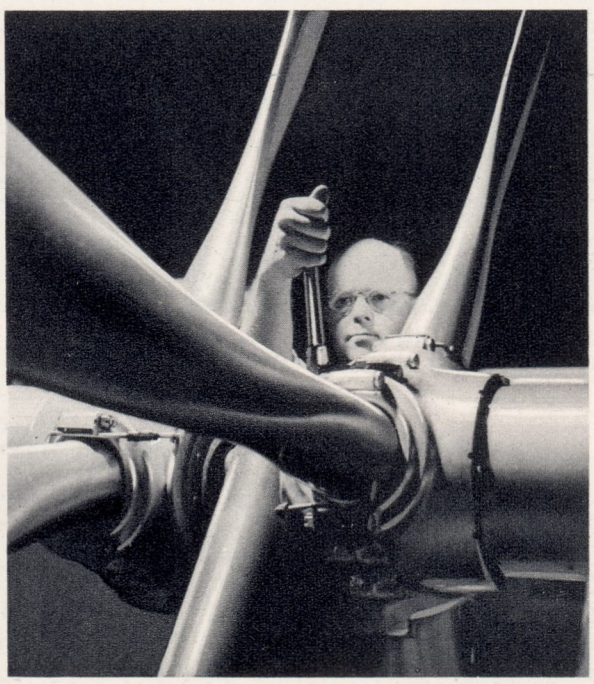


Foundations for the big bomber powerhouse (above) which will supply most of the plant's electric power, go deeply into the earth.

All-important to airplane performance is its complex wing structure. Here a Ford worker crouches between bulkhead sections, making a routine progress check on wing construction

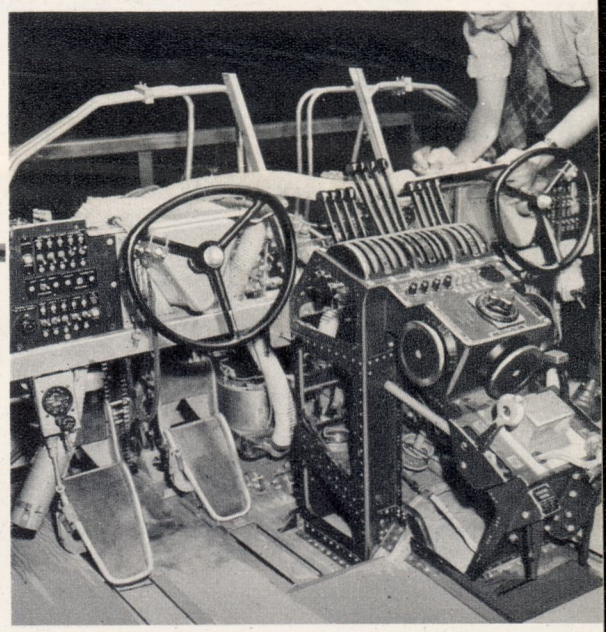


Floodlights bathe huge plant as construction proceeds by night. (Below) Machinery arrives. Much is already installed and working.



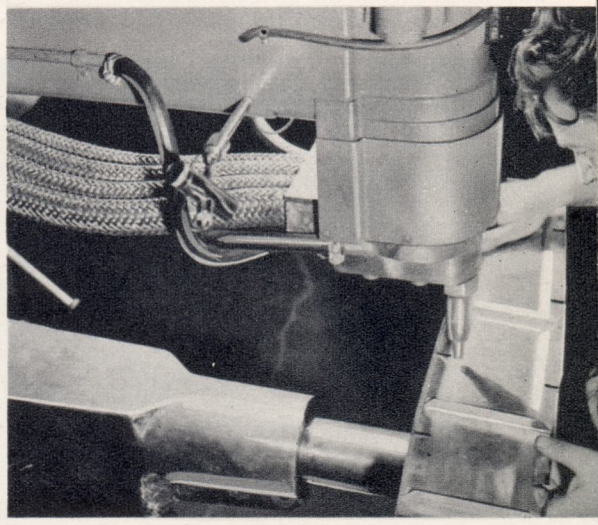
A Ford propellor expert is shown at work checking two of the big adjustable pitch "props" for the B-24 bomber to be built by Ford.

Known among fliers as an "oleo," this huge main landing gear for the B-24 is one of the plane's most intricate parts.



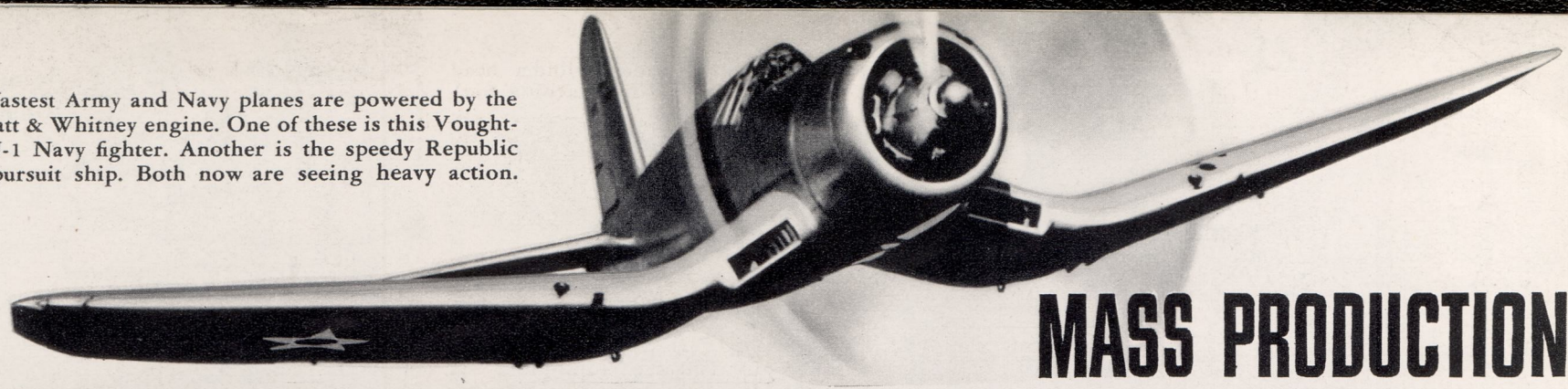
Typical of the Ford technique of breaking down big assemblies into smaller units which can be completed more quickly is this cockpit assembly.

Lights burn throughout the night at the plant where Ford produced its famous tri-motor transport planes during the '20s. As part of the preliminary bomber program, Ford will build a few of the Consolidated B-24 planes in this plant to help establish new, improved production methods to be used later on at Willow Run.



On huge electric welding machines like this one Ford plans to save valuable time now consumed in riveting many sections of the Consolidated B-24.

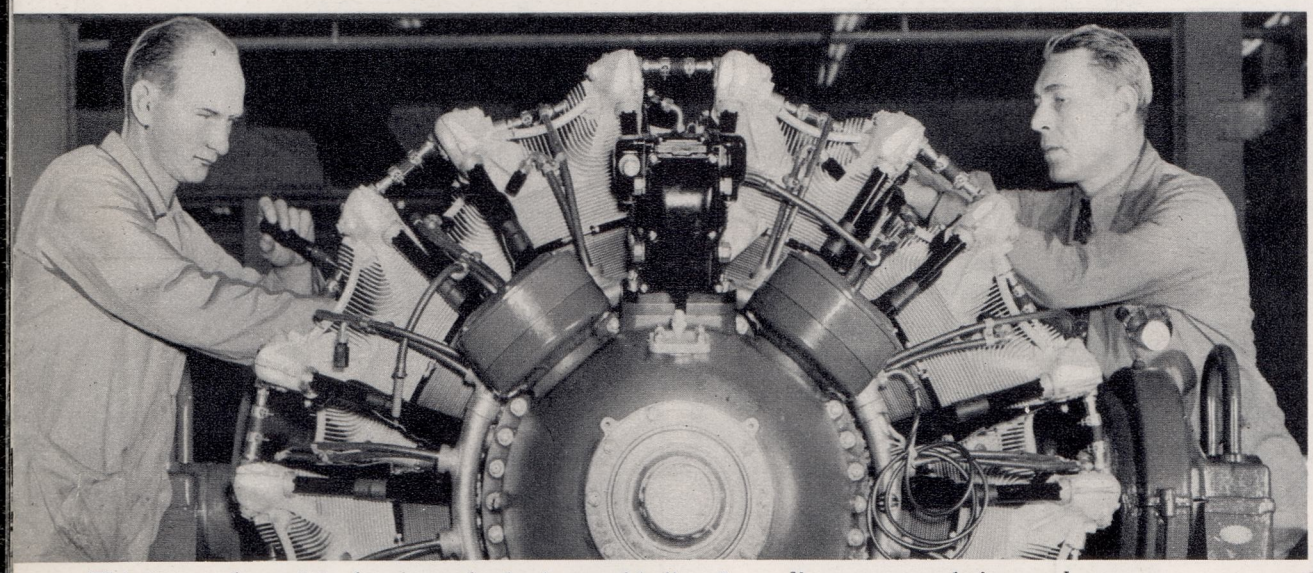
Some of the fastest Army and Navy planes are powered by the Ford-built Pratt & Whitney engine. One of these is this Vought-Sikorsky F4U-1 Navy fighter. Another is the speedy Republic P-47 Army pursuit ship. Both now are seeing heavy action.



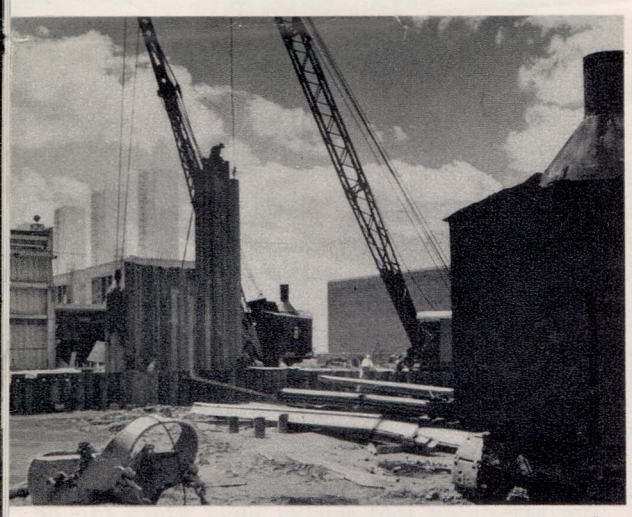
MASS PRODUCTION OF AIRPLANE ENGINES ...FORD STYLE!

Eleven months after ground was broken for a modern airplane engine plant (shown below), the first Pratt & Whitney engine came off the line—a construction and engineering record.

Designed for use during "blackouts," the big plant is one of the nation's chief producers of aircraft power. In its air-conditioned manufacturing sections double-row radial P & W engines are turned out by advanced Ford mass production methods.



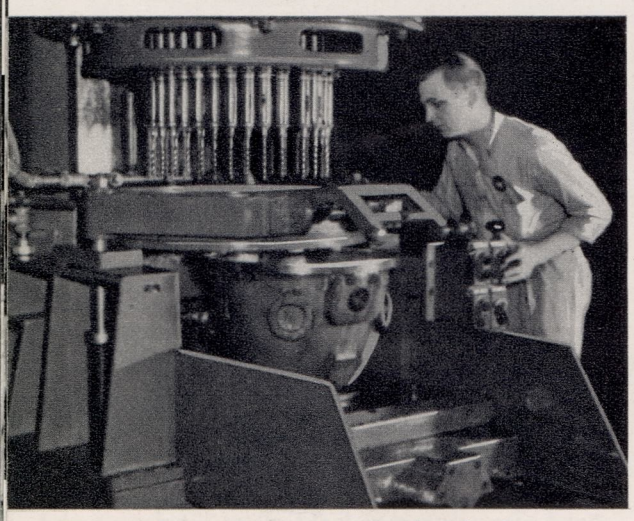
This "powerhouse" is shown on the final assembly line. Last adjustments are being made and soon the engine will undergo rigid tests in special test cells adjoining the plant.



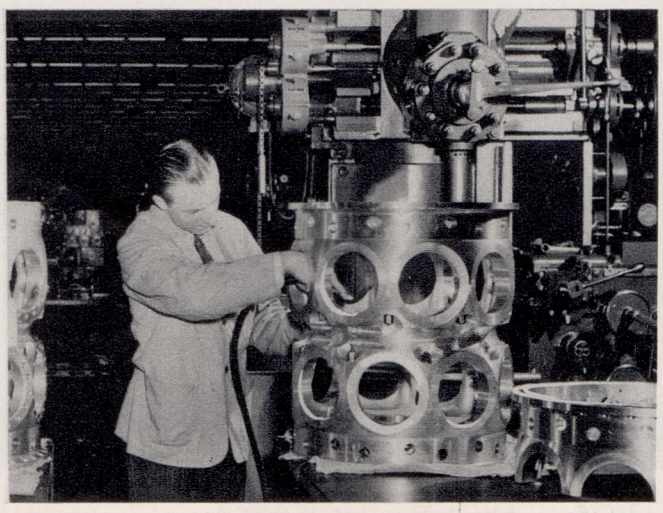
Even before production of P & W engines got under way, orders from the government made necessary a 400-foot addition to the plant, now completed.

Precision is measured in millionths of an inch on airplane engine parts. Lives and success depend on constant checking with incredibly accurate gages.

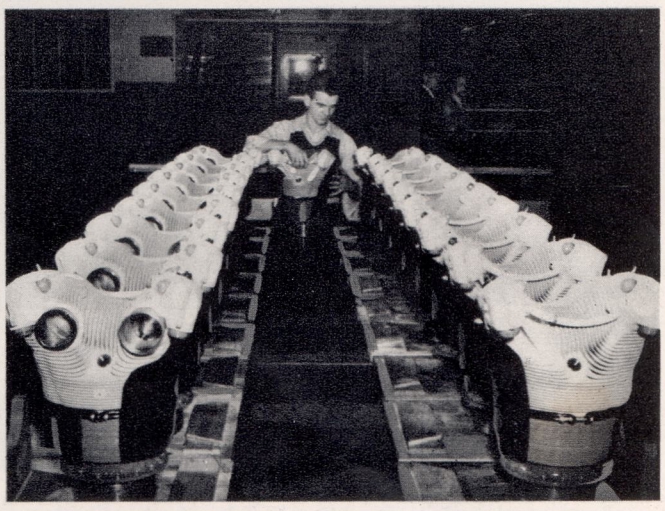
Shiny pistons, all machined and ready for assembly, must be matched in weight. A slight variation means the immediate rejection of an otherwise perfect part.



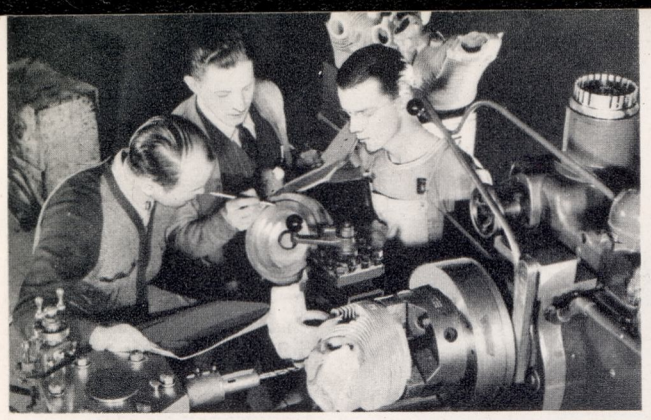
Human ingenuity reaches its height in uncanny machine tools such as this intricate multiple drill.



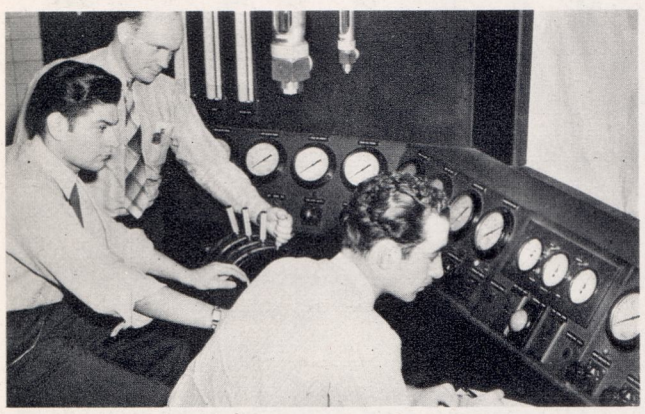
Backbone of the P & W engine is this crankcase. Position of the double row of cylinders is shown here.



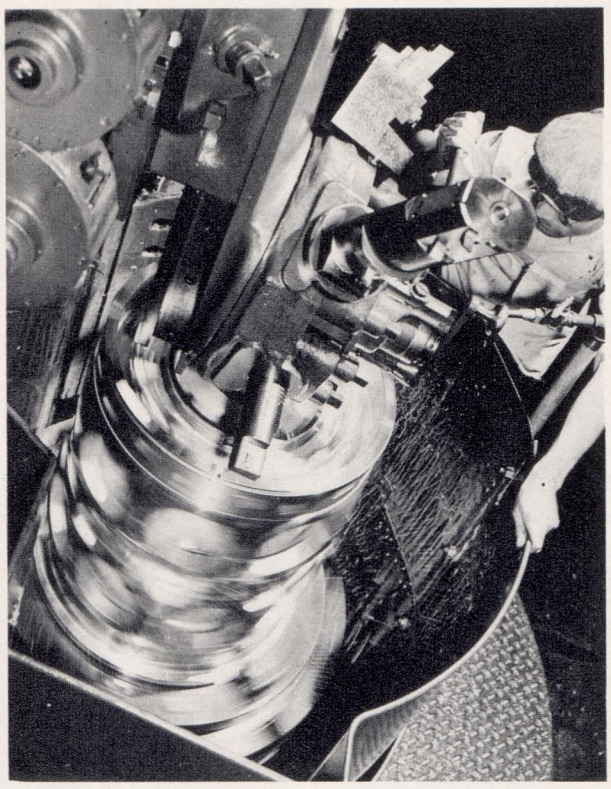
In the cylinder section, this inspector lines up two rows of assemblies that soon will become part of an engine.

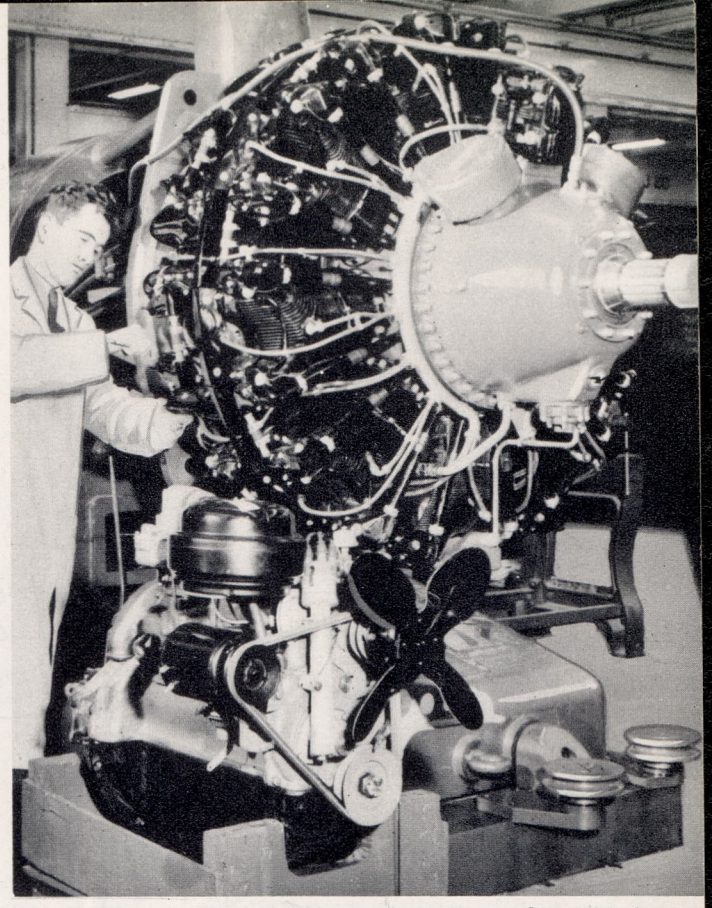


Above and below are students in the Aircraft Apprentice School being trained for production jobs.

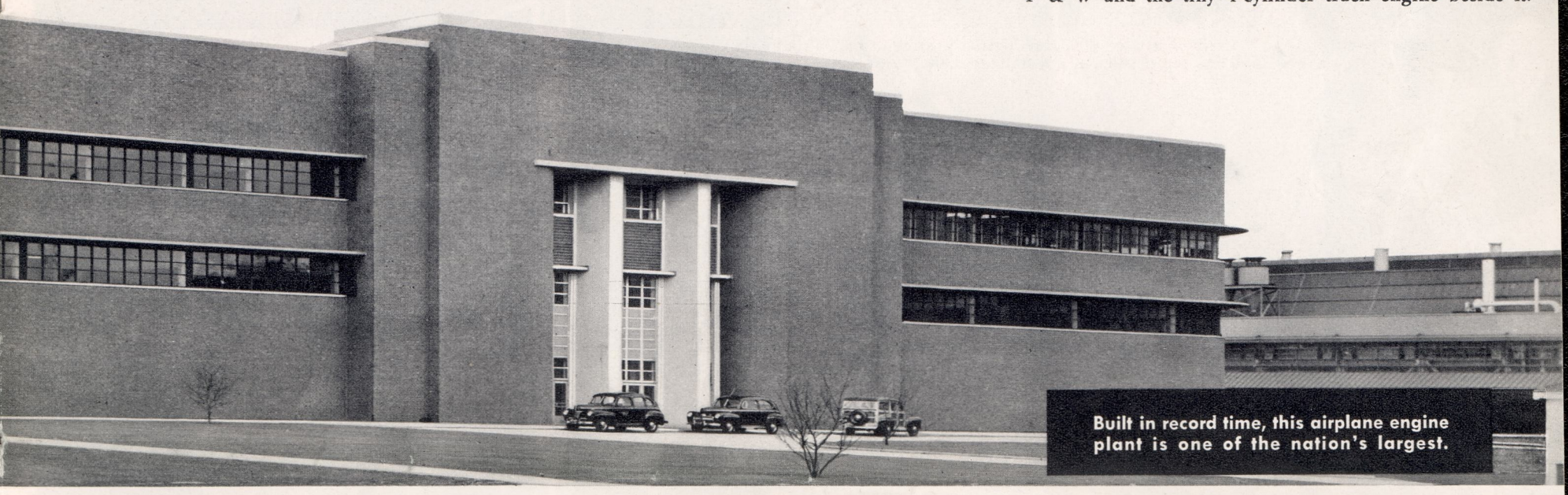


This is part of a Pratt & Whitney cylinder head in the jaws of an intricate boring machine tool.



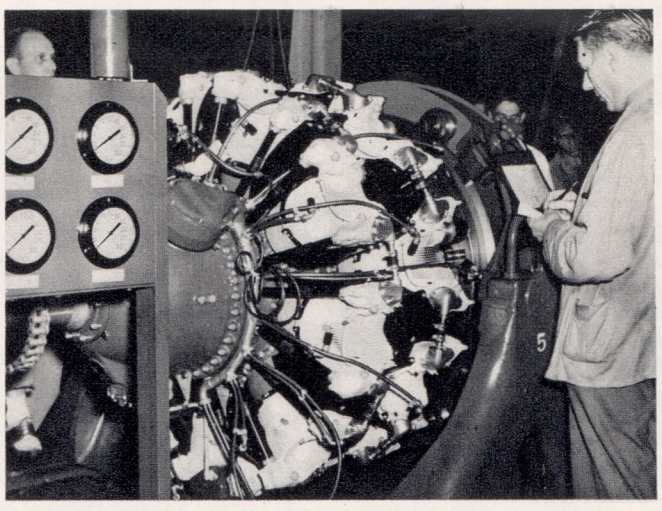


The smallest and largest engines built by Ford are this big P & W and the tiny 4-cylinder truck engine beside it.

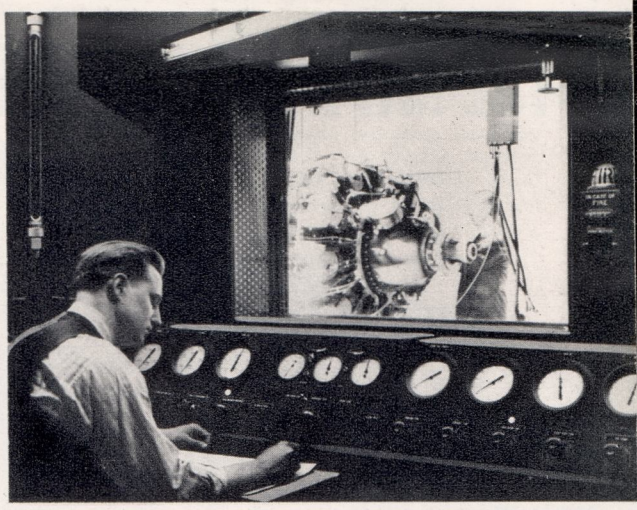


Built in record time, this airplane engine plant is one of the nation's largest.

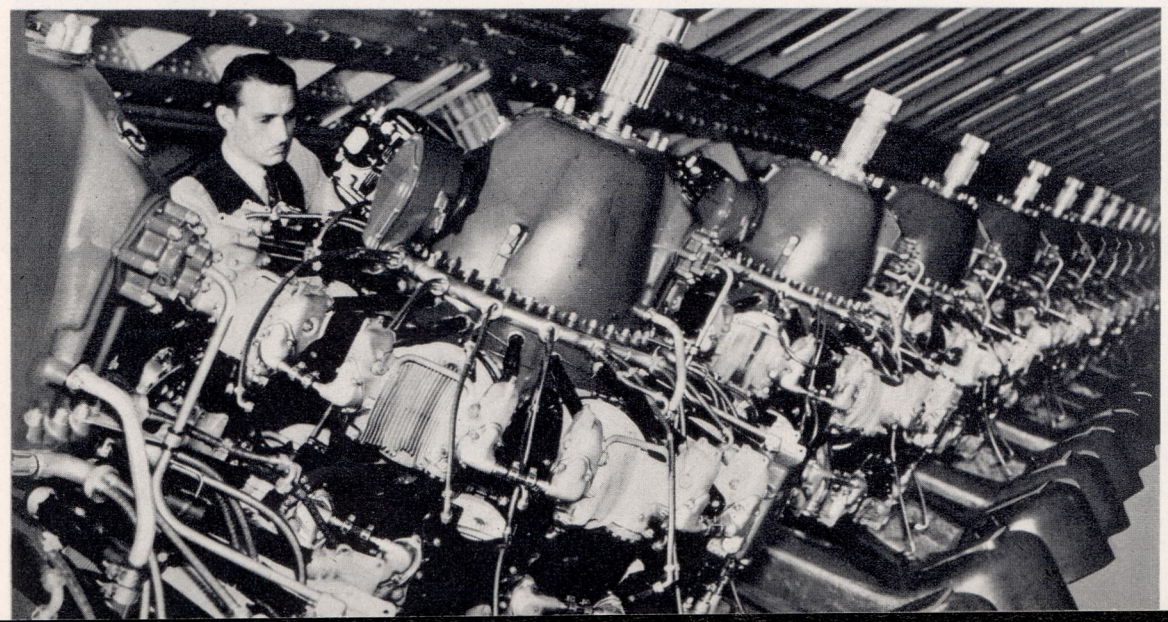
Engines are assembled on a "green" line, tested, and then torn down, then reassembled after inspection.



Each new engine, fresh from the assembly line, is connected to an electric motor for an oil compression test.



Behind thick glass of observation windows in Ford test cells, engine undergoes hours of test run.



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Careful inspection is a by-word in the Ford airplane engine plant. This impressive line-up (left) of finished engines receives a last-minute check before moving to the shipping department. Engines ready for shipment (right) are placed in special crates. Soon they will turn up 1,850 to 2,000 horsepower in some fighting plane.

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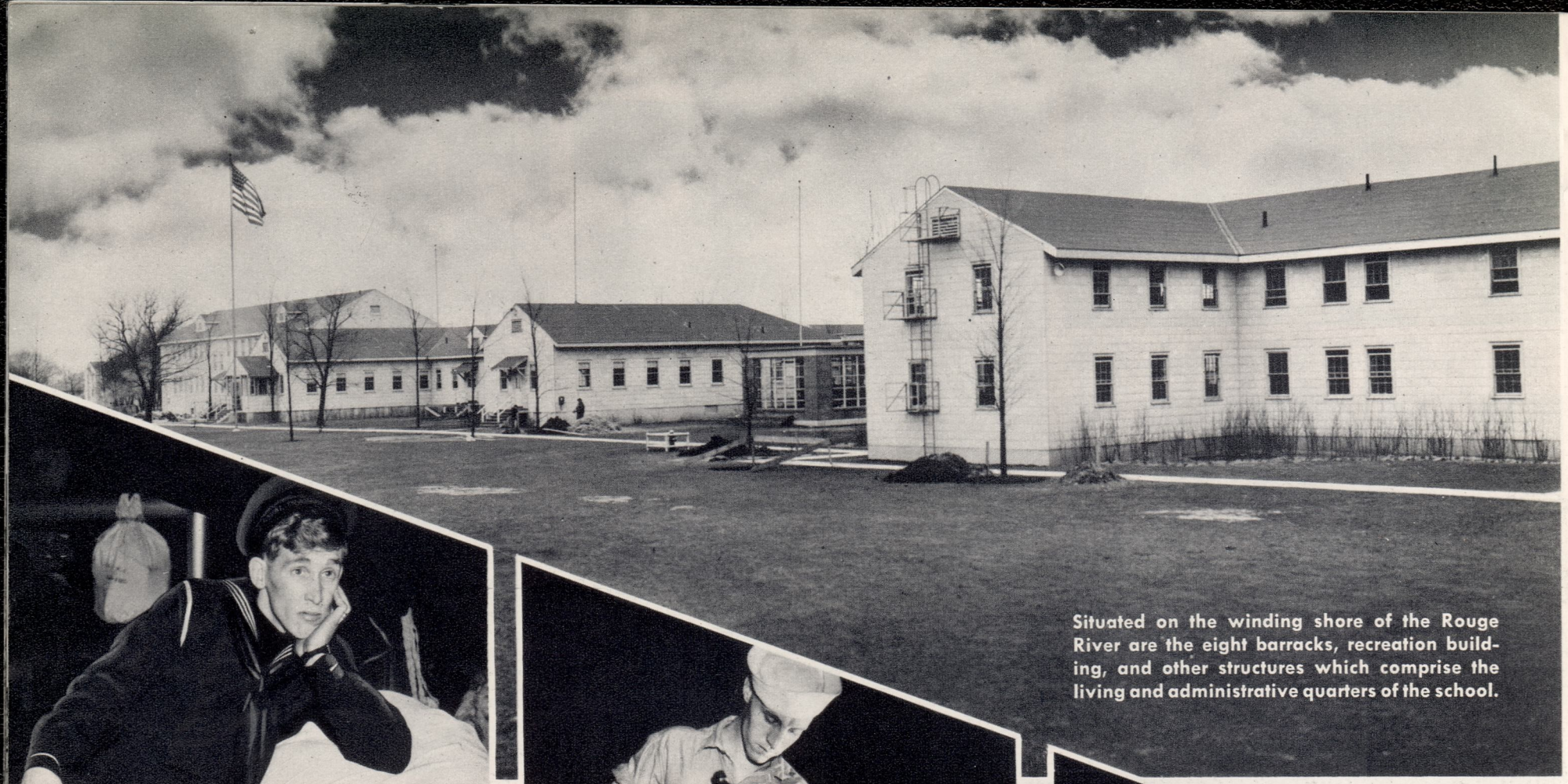
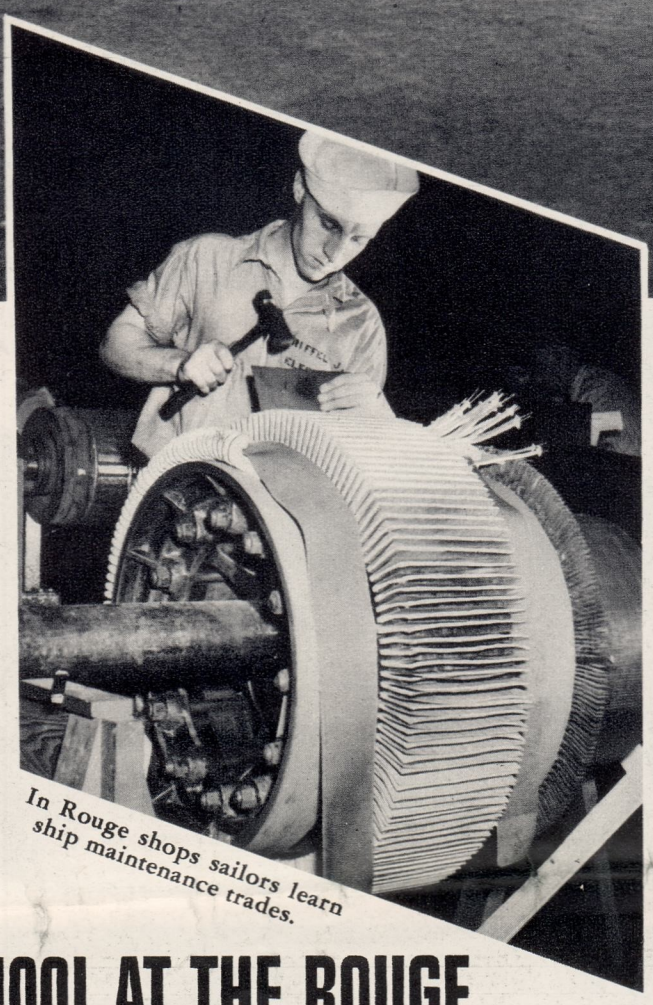


Situated on the winding shore of the Rouge River are the eight barracks, recreation building, and other structures which comprise the living and administrative quarters of the school.

Homesick maybe . . . but not hungry. Galley facilities equal those found in a good metropolitan hotel.



In Rouge shops sailors learn ship maintenance trades.

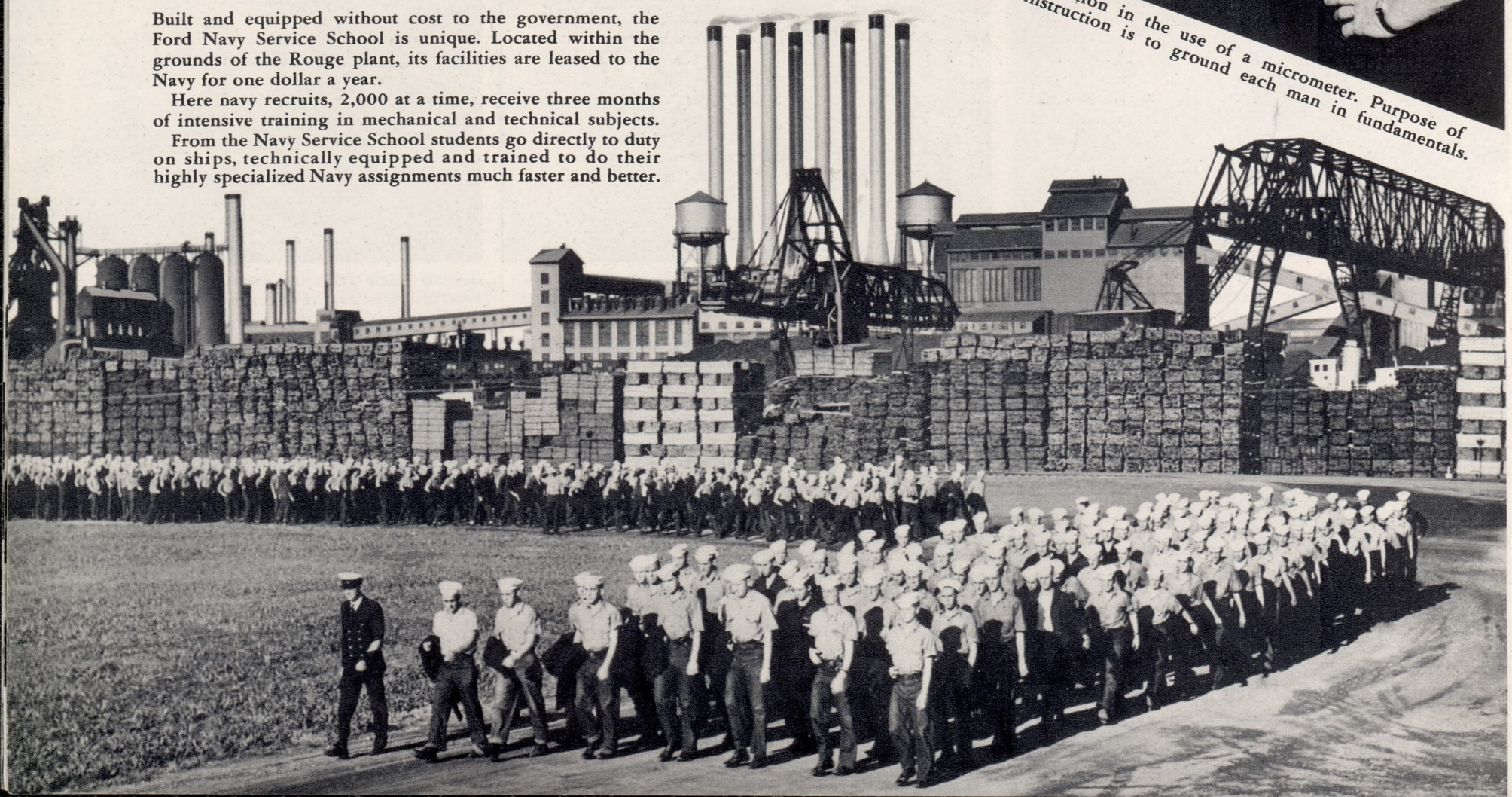
Instruction in the use of a micrometer. Purpose of instruction is to ground each man in fundamentals.

THE NAVY GOES TO SCHOOL AT THE ROUGE

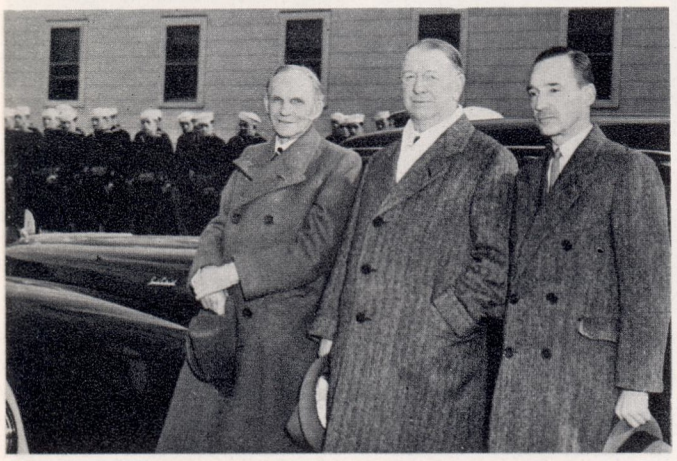
Built and equipped without cost to the government, the Ford Navy Service School is unique. Located within the grounds of the Rouge plant, its facilities are leased to the Navy for one dollar a year.

Here navy recruits, 2,000 at a time, receive three months of intensive training in mechanical and technical subjects.

From the Navy Service School students go directly to duty on ships, technically equipped and trained to do their highly specialized Navy assignments much faster and better.

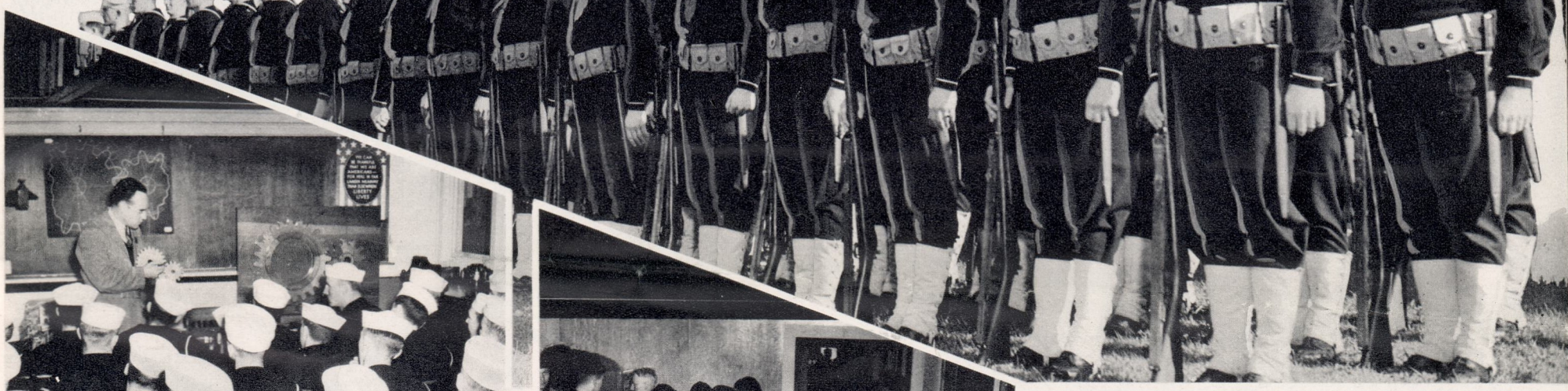


Recreation is important to the Navy recruit. The Ford school includes athletic equipment and a new recreation hall.

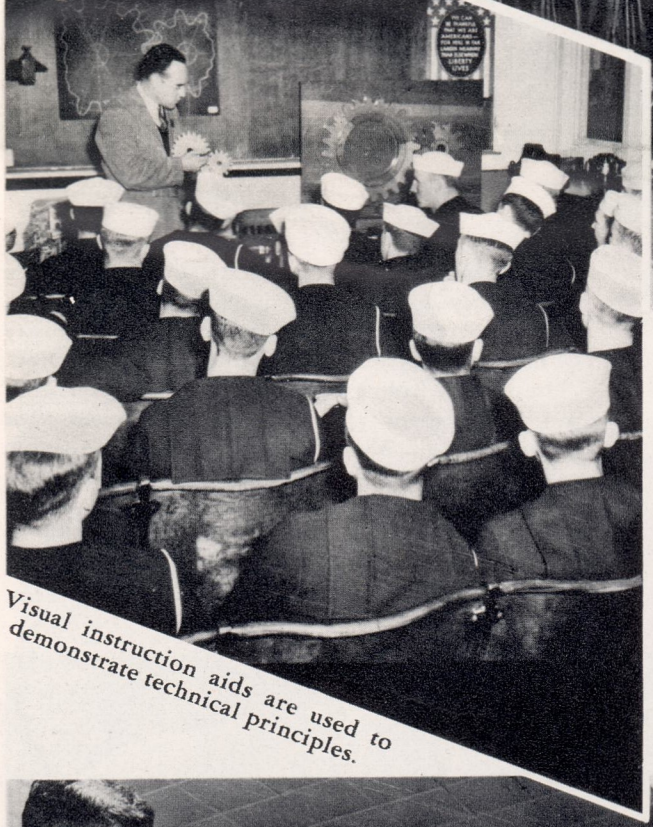


Secretary Knox, on Navy Day, inspects the Ford Navy Service School with Mr. Henry Ford and Mr. Edsel Ford.

Trim, speedy yacht Truant, chartered to the U. S. Navy by Mr. Henry Ford, is shown at the Great Lakes Naval Training Station receiving its commission as a full-fledged naval vessel.



All mechanical training and no drill wouldn't round out sailors. So drill goes on as usual under the direction of officers.

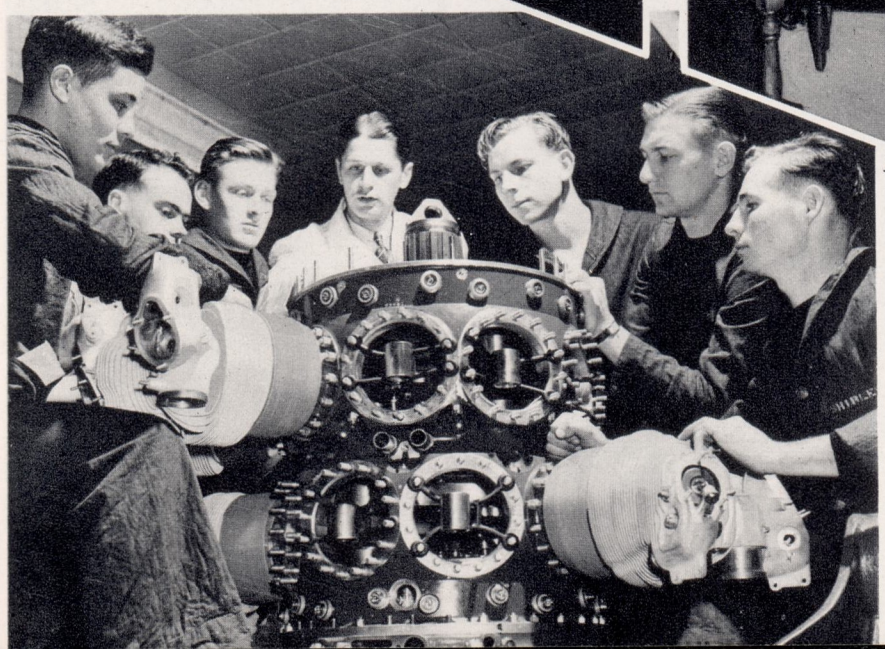


Visual instruction aids are used to demonstrate technical principles.

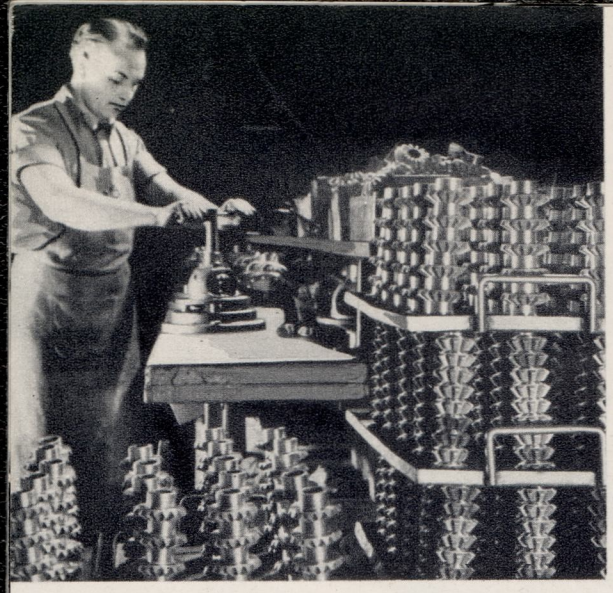
Pay day. Ford training is a stepping stone to higher Navy pay ratings.

New arrivals, loaded with Navy equipment furnished at the Great Lakes Naval Training Station.

★



Pratt & Whitney engine of the type used by the Navy. Students at the Ford School become familiar with all parts, learn to assemble and take apart the entire engine.



Row on row of "blitz buggy" gears. Officially named "reconnaissance car," the "blitz buggy" quickly earned the approval of officers and men.

Rolling along the Rouge assembly lines are Army staff cars. Regular Ford sedans, painted olive drab and stripped of civilian luxuries, they meet the rigid Army specifications.

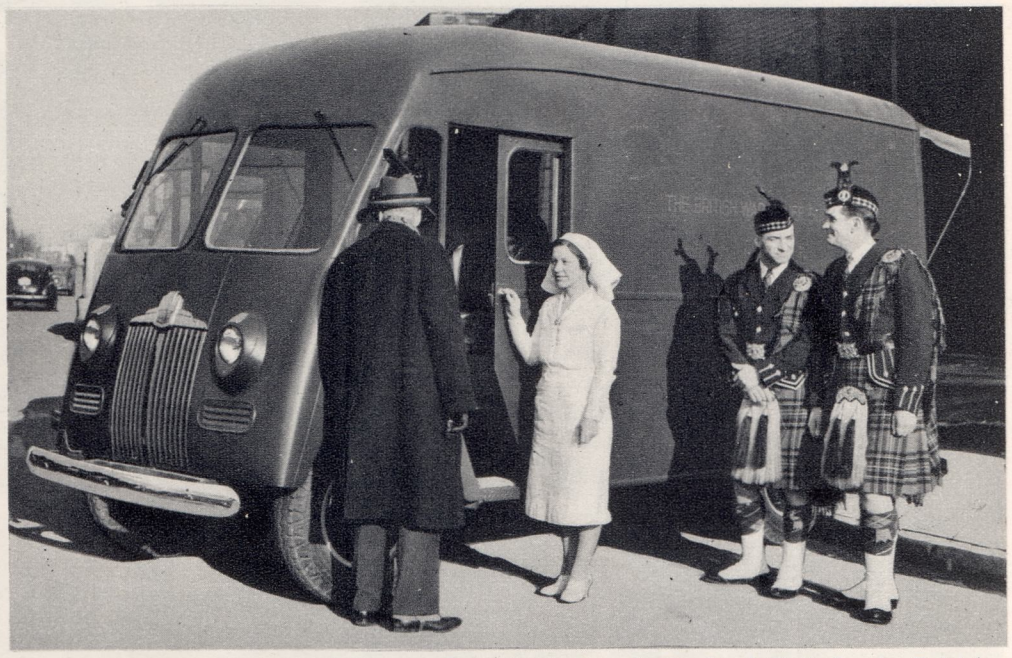
Brig. Gen. Charles Bonesteel and Mr. Edsel Ford inspect the unique pivoted headlight. For night repairs on the field, it swings around to light the engine.

WHEELS FOR THE ARMY

★ Keynote of modern military strategy is the use of new, fast, mobile equipment. Caught short, the Democracies turned to the automobile industry of the United States, asked miracles of production.

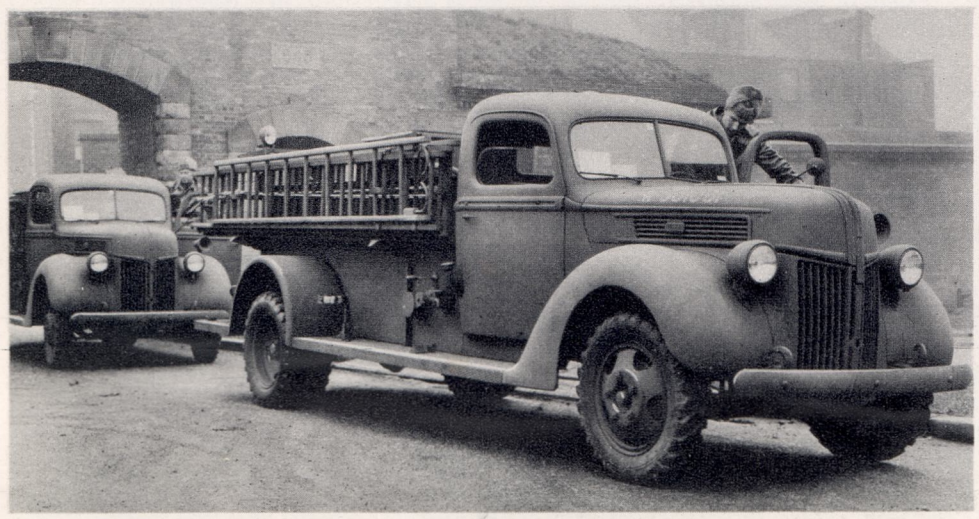
In the vast Rouge plant, came swift answer. Half a dozen different types of mobile equipment went into production. Much has been delivered. Assembly lines are busy on more. Those units already on the job with the United States Army, and in the armed forces of other allied nations, have proved able to do their work well and have won the complete respect of the various officers and men using them.

Essential to aerial warfare is the Ford Bomb Service Truck shown here hoisting a 600-pound bomb on a powerful derrick mounted at the rear of the truck.

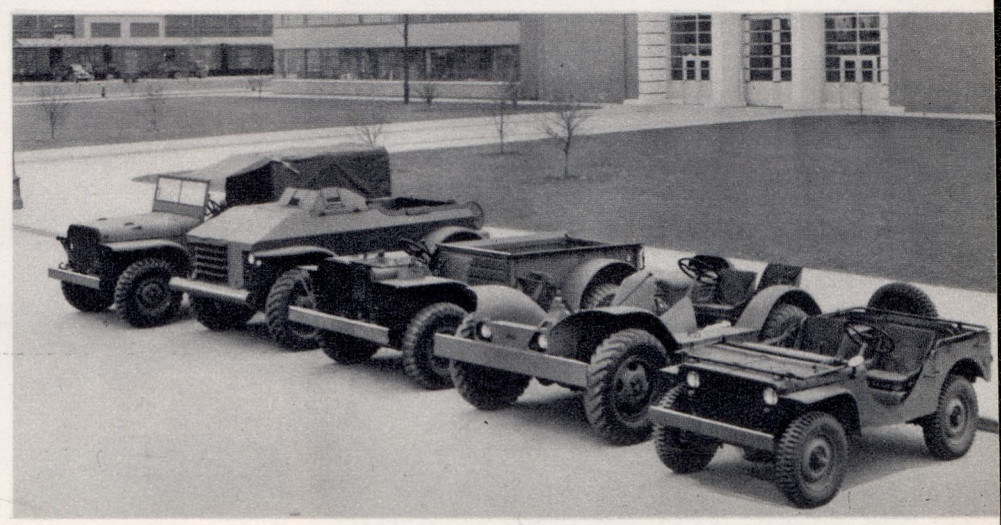


Meals on wheels are provided by Ford Field Kitchens in England. Built for the British War Relief Society, the field kitchen has a special body installed on Ford chassis.

Only 38 inches high, the ¼-ton "blitz buggy" has a four-wheel drive and a special transmission which permits six speeds forward and two in reverse. Here on the assembly line they look mighty tough. In the field they've lived up to their appearance.



Built to fight fires in Army bases, these Ford fire trucks are shown at Fort Wayne in Detroit. Recent tests have shown them to be highly efficient and dependable units.



Here is a line-up of unusual Ford mobile military units. They include cargo truck, observation post tender, motor gun carriage and Army reconnaissance car.

Put through many stiff tests over tough terrain on the day of delivery to the Army, the Ford "blitz buggy" came through with honors as it has since then in the field.

The nimble little "blitz buggy" is shown in action on maneuvers with the U. S. Army. It makes a speedy mount for a machine gun. Gas consumption is low.

It can't swim deep rivers . . . but the stout-hearted "blitz buggy" is wired so that it won't "short" in wet weather. It's hard to stop by any means.

★ It doesn't fly . . . but it can take all the punishment the worst kind of bumps can deal out. Shown here is one of the spectacular moments filmed during a gruelling test.

One of the many furnaces in the Ford magnesium foundry, where magnesium is melted and poured into molds for lightweight castings for use in airplane engines.

Silvery metal being poured into this mold is magnesium. Weighing less than aluminum, it is used for some of the bulkier castings that go into a Pratt & Whitney airplane engine.

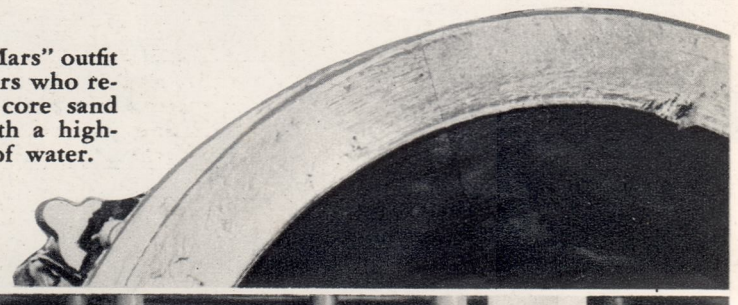
METALS THAT MEAN VICTORY

The Ford automotive technician, expert in handling metal from raw ore to finished part, is participating in a new drama—converting defense metals into armaments.

One of these significant defense metals is magnesium. In a magnesium foundry, Ford is pouring lightweight castings for use in airplane engines. Famous Ford casting techniques are used in the magnesium foundry to increase the production rate.

Another foundry for steel casting, now under construction at the Rouge, will augment substantially the present Rouge foundry capacity geared to defense work.

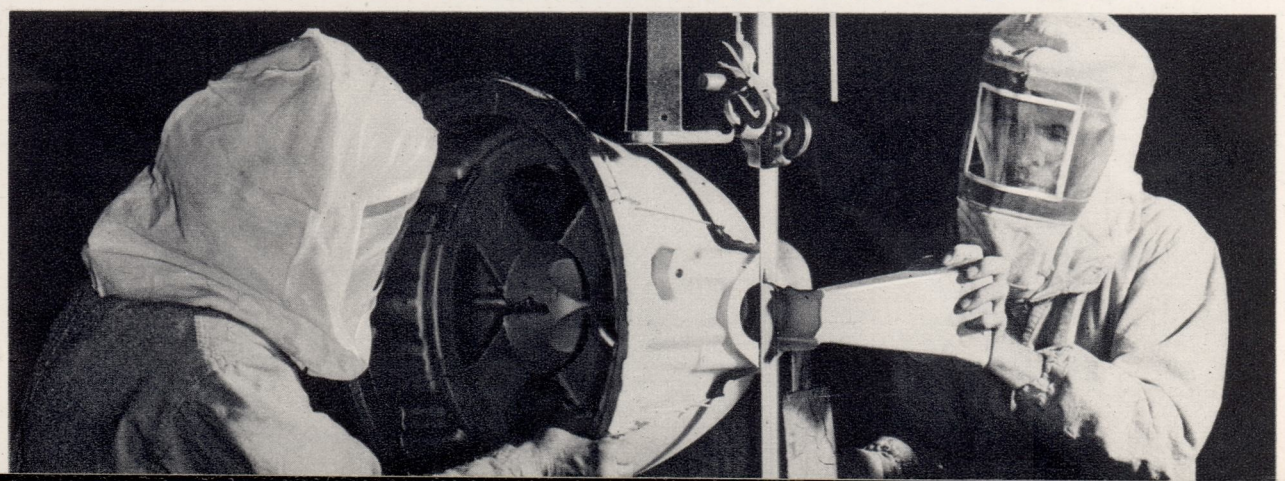
This "man from Mars" outfit is worn by workers who remove mold and core sand from castings with a high-pressure stream of water.



An important time-saving method in the Ford magnesium foundry is the continuous conveyor system. This photo shows two rough airplane engine castings near one of the conveyor lines.

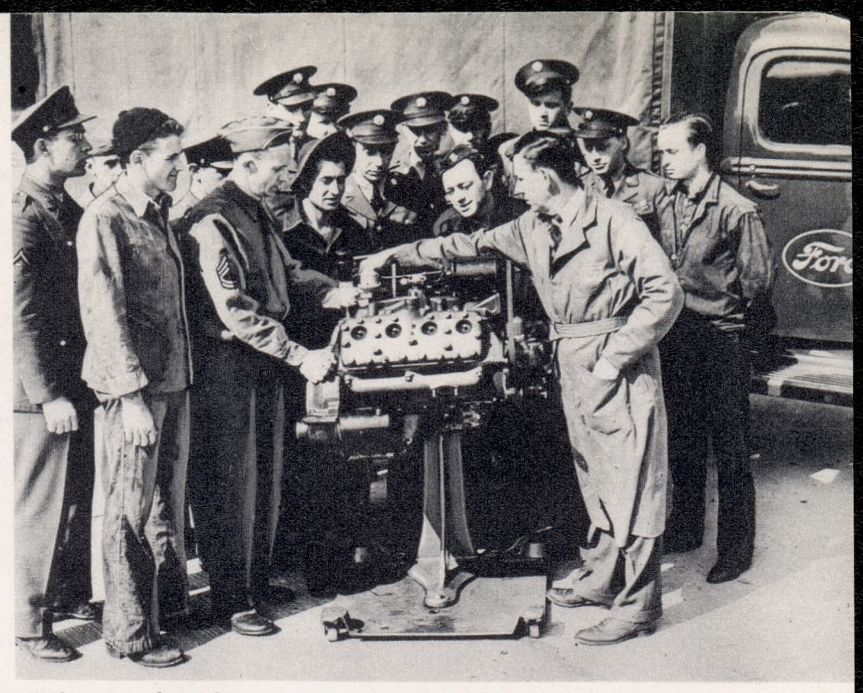
A unique apparatus devised by Ford safety engineers as a guard in the magnesium foundry is this fire extinguisher. Instead of water, it shoots a stream of sand on burning metal particles, smothering the flames. Water causes magnesium powder to burn explosively.

(Below)—Special helmets and capes are worn by workers who trim magnesium castings. This safety precaution is similar to others practiced throughout Ford plants to protect workers.

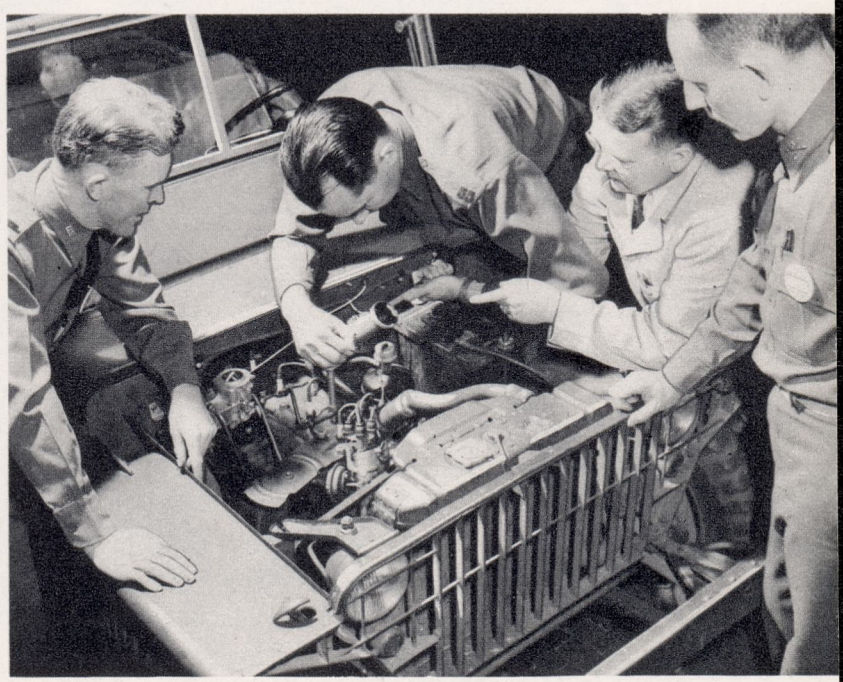


ARMY & RED CROSS GET INSIDE INFORMATION

★ Training skilled hands is a Ford tradition. At an Army Service School at the Rouge, officers were trained in the maintenance of military units. Ford traveling "classrooms" provide the same training at Army posts throughout the nation. At the Ford Highland Park plant, girls of the Red Cross Motor Corps are taught how to drive and make all minor repairs on Ford motor units.



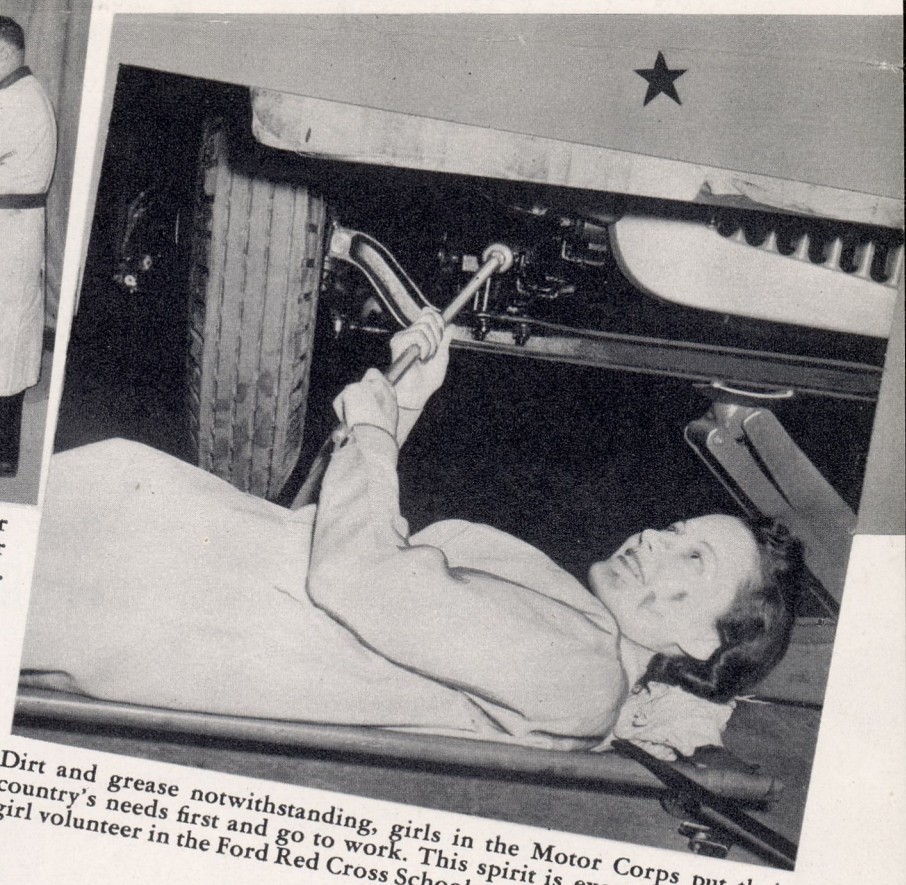
Officers and soldiers at Army posts all over the country have the advantage of a Ford "traveling classroom" to learn operation and maintenance of all Ford-built mobile military units.



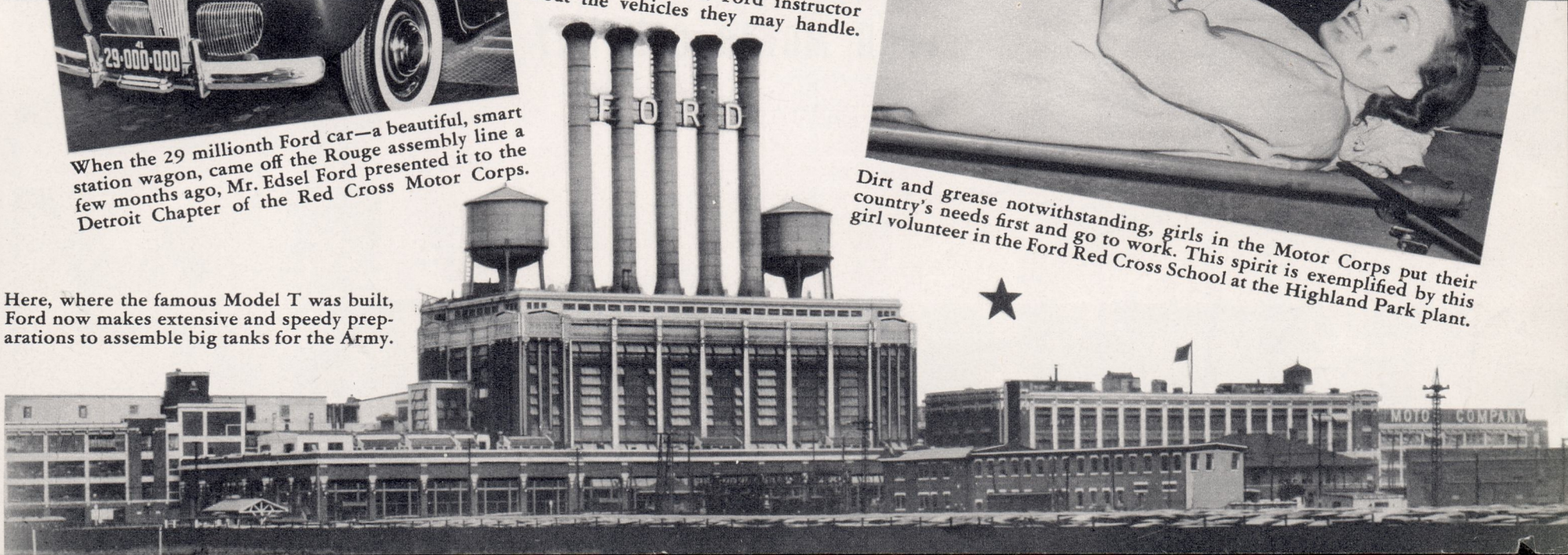
This is a view inside the Army Service School at the Rouge plant, with three officers engrossed with the "innards" of a Ford "blitz buggy." Ford trained more than 100 officers a month in this school.

When the 29 millionth Ford car—a beautiful, smart station wagon, came off the Rouge assembly line a few months ago, Mr. Edsel Ford presented it to the Detroit Chapter of the Red Cross Motor Corps.

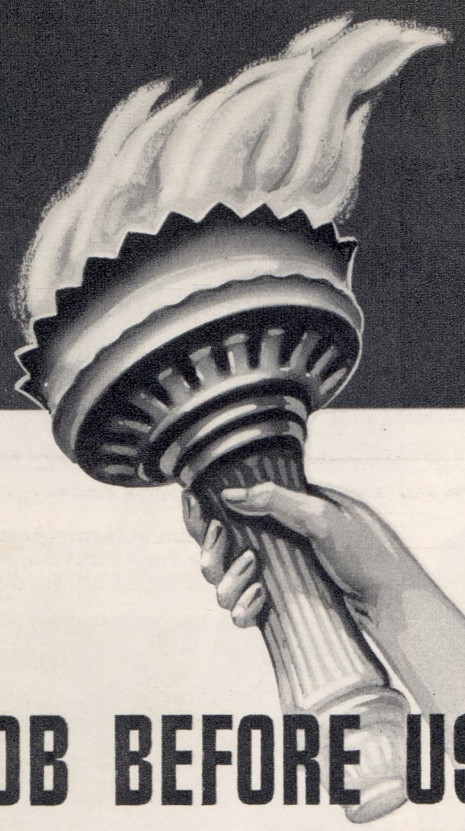
Volunteers in the Red Cross Motor Corps, learn from a Ford instructor about the vehicles they may handle.



Dirt and grease notwithstanding, girls in the Motor Corps put their country's needs first and go to work. This spirit is exemplified by this girl volunteer in the Ford Red Cross School at the Highland Park plant.



Here, where the famous Model T was built, Ford now makes extensive and speedy preparations to assemble big tanks for the Army.



THE JOB BEFORE US IS CLEAR

THESE are stern days, but our course is clear. As a nation, we find ourselves faced with only one duty and one choice.

This greatly simplifies things. When numerous courses were open to us as a nation, the range and diversity of opinion was wide. Now that we are faced with one unmistakable necessity, difference of opinion has been absorbed in complete unity of action.

Our sons and kinfolk in the Services unite us. Our financial support of the vast and costly war effort unites us. Our industries, diverted to the most massive schedule of production ever attempted, unite us in our daily task.

American industry has been called upon to do a gigantic job and to those who are inexperienced with operations of such magnitude its response may have appeared slow. In the automotive industry, we know from our own experience that progress has been unparalleled and that the volume of production now under way will be commensurate with the tremendous needs ahead of us.

Our duty as civilians is as clear and imperative as that of our soldiers and sailors. As civilians we are responsible for the supply of the Forces and for the order and safety of our respective communities. We are responsible, too, for those agencies—especially the Red Cross and the U.S.O.—that convey our personal interest and service to the men of the Army and Navy.

We may expect mistakes to be made—men are only human. But we may confidently expect the traditional American reaction—that initial confusion will disappear, and mistakes be corrected.

In the end, we may expect our war effort to yield a secure nation—a world free from powerful aggressors—and the progress that comes through pressure to discover new and better ways to do things.

So we know what we have to do. Our national conscience is clear. We have not coveted any nation's territory. We have not been jealous of any people's progress. We have not plotted any people's ruin. And we are absolutely confident of the outcome.

Stern as these days are, still they hold much of promise. Today as never before, ours is a common cause, and to it are pledged the entire facilities of the Ford Motor Company.

FORD MOTOR COMPANY

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